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Paper A

CONNECTING SYMBOLS FOR TIME AND SPACE IN CC

S R RANGANATHAN

Traces the evolution of connecting symbols in CC from the single one of colon to the six currently used. Shows how this was made necessary by the helpfulness of sequence of classes as determined by the idea plane independently of the limitations of the notational plane. Indicates the corresponding increase in the versatility of the notational system. Points out the violation to helpful sequence caused by the use of the same symbol for time and space facets, experienced at the level of the depth classification of micro documents. To remove this violation, the use of the quotation starter (") is advocated as the connecting symbol for time. Its ordinal value is fixed as being between those of zero and full stop. This allows telescoping of space levels. Its help in classifying the documents on the administration of Local Bodies is demonstrated. New problems for further research are indicated.

CC = Colon Classification

Subject	Ed 1(1933)	Ed 4(1952)
1 History of library science in India brought up to 1950's	2v2:N5	2v2.N5
2 Library sciences	2	2
3 Library conditions in India brought upto 1950's	2u2:N5	2.2.N5
4 Library management	24	2:8
5 Library management in India brought up 1950's	24u2:N5	2:8.2.N5

IV/19

1 SINGLE CONNECTING SYMBOL ONLY

11 Subjects for Consideration

Let us consider the class numbers, given in the table on previous page, as constructed by ed 1 and ed 4 respectively of CC.

12 Ed 4(1952)

Viewed from the idea plane, the sequence of the subjects, as given in the above table, is helpful. The CC numbers according to ed 4(1952) implement in the notational plane these findings of the idea plane.

13 Ed 1(1933)

But the CC numbers according to ed 1(1933) force these subjects in the following sequence.

1	History of library science in India brought up to 1950's	2v2:N5
2	Library science	2
3	Library conditions in India brought up to 1950's	2u2:N5
4	Library management	24
5	Library management in India brought up to 1950's	24u2:N5

14 Violation of the Canons of Decreasing Extension

In this sequence, the description of the library conditions within a specific space-time-mesh (subject 1) gains precedence over a general account of library science (subject 3). So also the description of library management within a specific space-time-mesh (subject 4) gains precedence over a general account of library management. This violates the canon of Decreasing Extension (P1). For, a general account of a subject is of greater extension than an account of it as it obtains within a specific space-time-mesh.

15 Not Approach Materials

At the same time, the descriptive accounts of libraries in diverse space-time-meshes cannot be taken to be Approach Materials (P3) such as the bibliography, encyclopaedia of history of library science can be.

16 Failure due to Use of a Single Connecting Symbol

Why did ed 1(1933) to ed 3(1950) fail to implement the findings in the idea plane? Because, the versatility of the notational system of ed 1(1933) to ed 3(1950) was too poor for the purpose. This poverty in versatility is really traceable to the same connecting symbol " : " being used for all kinds of facets.

17 Incidence of Homonym

The notational plane would have brought subject 1 after subject 3, as required by the idea plane, if the Geographical Facet had been introduced by the connecting symbol " : " instead of u. Then, the class number of subject 1 would have been 2:2:N5. But according to the Facet Formula prescribed in ed 1(1933) to ed 3(1950), the above number would have represented "Public library in 1950's". Thus 2:2 would have become a homonymous class number meaning at once "Public library" and "Library conditions in INDIA". Such an incidence of homonym is fatal in a classificatory language. For different subjects would get promiscously mixed up. Chaos will prevail among subjects instead of helpful arrangement. All the Laws of Library Science would thereby be violated.

18 Avoidance of Homonym

Homonym is enemy number one to classification. Its avoidance should have priority over everything else. Therefore ed 1(1933) had to change the number for one of the subjects, forcedly though it might be. Accordingly, it moved the descriptive account to the group of approach materials. Since u was mnemonic for "Survey", it replaced the " : " before the Geographical Facet by "u". This had to be continued even in ed 3(1950), as no means were found to increase the versatility of the notational system.

2 MULTIPLICITY OF CONNECTING SYMBOLS

21 (PMEST)

However, the problem was continuously kept in mind. In 1942, the concept of Five Fundamental Categories — Personality, Matter, Energy, Space and Time (PMEST) was first hit upon (L1). But during the next years, it was used only as an aid to description. It was only in 1949 that its potentiality to increase the versatility of the notational plane was secured (O1).

22 Postulates

The exploitation of this potentiality is now based on the following two postulates:-

1 Postulate of Isolate Facets. Each facet of any subject - other than its basic facet - can be deemed to be a manifestation of one and only one of the five fundamental categories (PMEST) (E1); and

2 Postulate of Connecting Symbols. The connecting symbols to be inserted in front of the various kinds of facets in CC are given in the following table (E2).

Facet	Connecting Symbol
[P]	, (Comma)
[M]	; (Semi colon)
[E]	: (Colon)
[S]	. (Full stop)
[T]	. (Full stop)

The class numbers formed according to ed 4(1952) to ed 6(1960) are based on these postulates. They are given in the last column in the table in sec 1.

23 Essence of the Postulates

From our present angle, the essence of the two posulates is that the single connecting symbol ":" has given place to four connecting symbols. These connecting symbols function also as indicators of the nature of the facets succeeding them. All the five kinds of facets can be independently provided in a class number without the creation of homonyms.

3 SINGLE MANIFESTATION OF SPACE ONLY

31 Subjects for Consideration

Let us next consider the following class numbers as constructed by ed 2(1939) and ed 6(1960) of CC:

Subject	Ed 2(1939)	Ed 6(1960)
1 Travels in Asia	U8:4	U8.4
2 Travels in Himalayas	U8:4MH	U8.4.H
3 Travels in India	U8:44	U8.44
4 Travels in Vindhyas	U8:44MV	U8.44.V
5 Travels in South India	U8:441	U8.441

6	Travels in Annamalai Hills	U8:441MA	U8.441.A
7	Travels in Tamil Nadu	U8:4411	U8.4411
8	Travels in Serverai Hills	U8:4411MS	U8.4111.S
9	Travels in Kerala	U8:4412	U8.4412

32 Ed 6(1960)

Viewed from the idea plane, the sequence of the subjects, as given in the above table, is helpful. This helpfulness is determined in essence by the helpfulness of the sequence of the isolates in the space facet. In this sequence, a mountain is brought between a conventional geographical area of the least extension containing it and the conventional areas whose extension is just too small to contain it. The CC numbers according to ed 6(1960) implement in the notational plane what is found by the idea plane to be helpful.

33 Ed 2(1939)

But the CC numbers as constructed by ed 2(1939) forced these subjects into the following unhelpful sequence:

1	Travels in Asia	U8:4
2	Travels in Himalayas	U8:4MH
3	Travels in India	U8:44
4	Travels in Vindhya Mountains	U8:44MV
5	Travels in South India	U8:441
6	Travels in Annamalai Hills	U8:441MA
7	Travels in Tamil Nadu	U8:4411
8	Travels in Serverai Hills	U8:4411MS
9	Travels in Kerala	U8:4412

34 Unhelpful Sequence

The above sequence is easily seen to be unhelpful. It is best seen by extracting the four subjects forming travels in the four different mountains. We get the following sequence:

1	Travels in Serverai Hills (a small mountain within Tamil Nadu)	U8:4411MS
2	Travels in Annamalai Hills (a mountain partly in Tamil Nadu and partly in Kerala)	U8:441MA

3 Travels in Vindhya Mountains (a bigger mountain ranging over several states of India)	U8:44MV
4 Travels in Himalayas (a still bigger mountain ranging over India and several countries of Asia).	U8:4MH

The above sequence certainly violates the Canon of Decreasing Extension as viewed from the Extension of the conventional geographical area to which each mountain has to be assigned.

35 Attack on the Problem

From 1939, this problem had been simmering in the mind. The invitation by the FID in 1950 to take charge of its committee on General Theory of Classification FID/CA stimulated intensive work on problems of this nature belonging to the level of depth classification. The first fruits of the struggle (O3) did little more than to lay bare the difficulties encountered in the notational plane. No solution could be found till 1954.

36 Failure due to Recognition of a Single Manifestation Only

Why did ed 2(1939) to ed 5(1957) failed to implement the findings in the idea plane? Because the versatility of the basic concepts in the idea plane was too poor for the purpose. This poverty in versatility can now be traced to failure to recognise the possibility of more than one manifestation of the fundamental category space in one and the same subject.

4 MULTIPLICITY OF LEVELS OF SPACE

The concept of 'Level' for the fundamental category Personality and Matter was first hit upon in 1952 (O4). It was conjectured that level can also occur in space. It was included in Report 2 to FID/CA. However, several attempts to implement the concept in the notational plane failed. An anthropomorphic approach brought a possible solution within sight (C1).

41 Featured Space

This led to the concept of Featured Space, its being treated as an organ of the regional division of the surface of the earth, and its being therefore assigned to the Second Level of Space. This was finalised in 1956. A schedule for second level was constructed (S1:P). But it was considered premature to include it in ed 5(1957) of CC. An extract from it, likely to be needed in the classification of micro documents or conventional books was included in ed 6(1960). This concept of levels of space has enabled the notational plane to implement the helpful sequence determined by the idea plane, as shown in the table in Sec 3.

5 CONNECTING SYMBOL FOR TIME AND SPACE

51 Subjects for Consideration

Let us now consider the following class numbers as constructed by ed 6(1960) of CC.

Subject	Ed 6(1960)	Proposed
1 Travel in Madras State in 1960	U8.4411.N60	U8.4411"N60
2 Travels in Serverai Hills in 1960	U8.4411.2S.N60	U8.4411.2S"N60
3 Travel in Madras (City) in 1960	U8.4411.3M.N60	U8.4411.3M"N60

52 Proposed Class Numbers

As viewed from the idea plane, the sequence of the subjects as given in the above tables is helpful. This helpfulness is determined in essence by the helpfulness of the sequence of the host classes ending with the second level of space facet. In their sequence, travel in an area of greater extension (in Madras state) has precedence over travel in an area of smaller extension (in the Serverai Hills and in Madras City respectively). This sequence is in conformity to the Canon of Decreasing Extension (P1). The proposed class numbers implement in the notational plane what is found by the idea plane to be helpfu

53 Ed 6(1960)

But the CC numbers as constructed by ed 6(1960) force the subjects into the following unhelpful sequence:

1	Travel in Madras (State) in 1960	U8.4411.N60
2	Travel in Serverai Hills in 1960	U8.4411.N60
3	Travel in Madras (City) in 1960	U8.4411.3M.N60

54 Violation of the Canon of Decreasing Extension

The above sequence violates the canon of Decreasing Extension (P1). This is easily seen by extracting the host classes of the subjects obtained by omitting the Time Facet. This was realised in the course of an intimate study of Depth Classification along with Shri P B Roy, Librarian of the Commercial Library of the Government of India during January to February 1961.

17 Ad Hoc Solution

We first attempted to get over the difficulty by prefixing Z to every isolate number in the space facet of second level. There the helpful sequence was restored as shown by the following table:

1	Travel in Madras (State) in 1960	U8:4411.N60
2	Travel in Serverai Hills in 1960	U8:4111.Z2S.N60
3	Travel in Madras (City) in 1960	U8.4411.Z3M.N60

Rov rightly insisted that this was only an ad hoc solution. It was more like treating the symptom than removing the cause of the disease and the symptom.

56 Failure due to Use of the Same Connecting Symbol for Time and Space

The root cause of the trouble was the use of the same symbol "." as the connecting symbol for time facet as well as space facet. While designing the connecting symbols for the fundamental cotegories in 1949, this became necessary (O1). This was result of the decision to use the punctuation marks as connecting symbols for the fundamental categories. There are only four punctuation marks as against the five fundamental categories.

57 Ostrich-Like Wish

Ostrich-like, it was hoped that this forced choice of one and the same connecting symbol for time and space would not lead to any catastrophe. This has now turned out to be a fond hope and a false wish. Sayers had warned me in 1924, while starting the design of CC that unexpected difficulties would appear as the depth of the Classification needed to be increased in order to meet the demands of formations of deeper interiors in the Universe of Knowledge in course of time. It is not wise to design the notation having in view only the superficial strata of knowledge that might get embodied in books for the time being. The use of a single connecting symbol for all facets led to difficulties within a period of 20 years. This became acute after World War II by the demand of the depth Classification needed for the documentation of micro-documents. Even books are now rapidly appearing making these difficulties acute. Four connecting symbols in the place of one helped us to tide over the difficulties. Wider practice of documentation and the greater proliferation of micro thought have now begun to create difficulties traceable to the use of one and the same connecting symbol for time and space.

6 DIFFERENT CONNECTING SYMBOLS FOR TIME AND SPACE

61 Long Range View

It was, therefore, decided that the root cause of the difficulty should be removed rather than a resort to ad hoc make-shift remedies such as prefixing Z to isolate numbers in second level space. Transition from macro thought to micro thought called for different connecting symbols to as many of the five fundamental categories as possible. We are now on the eve of transition from micro thought to "spot thought" on the analogy of the current transition from micro analysis to "spot analysis" in analytical chemistry. In classification of "spot thought" different connecting symbol is used for the different fundamental categories time and space. As already stated in sec 23, a connecting symbol functions also as an indicator of the fundamental category that follows. This function should not be taken away from it. This long-range view was accepted as the starting point.

62 Search for a New Connecting Symbol

Then began the search for a new connecting symbol. In addition the four punctuation marks ", ; : ." two other digits are already in use as connecting symbols. They are O and " - " as connecting symbol for superimposed isolate. The single inverted comma ' - was first thought of. It was felt it may cause difficulty in case of slight carelessness in writing. Finally the mark for the start of quotation - " - was hit upon as a suitable digit for use as the additional connecting symbol. This has been already brought into use by UDC as the connecting symbol for time facet. UDC enclosed the time isolate number between the marks for the start of quotation and the mark for the end of quotation. This is not necessary in CC. It is sufficient to use only the mark for the start of quotation just in front of time isolate number.

63 Ordinal Value of Quote Mark

The ordinal value of quote marks (") was easily determined. By postulate, the fundamental category time is at the bottom of the scale of concreteness of PMEST. It is therefore necessary that its connecting symbol should have the least binding power (O2). Thus the position of the quote mark in the ascending sequence of the connecting symbols will be as shown below:

0 " . : ; , -

It is proposed to implement this decision in ed 7(1962) of CC. The last column in the table in section 5 shows how the adoption of (") as the connecting symbol for time implements in the notational plane what is determined by the idea plane as the helpful sequence of the subjects.

7 IMPERSONATION BY SPACE AS PERSONALITY

70 Preliminary

In the main classes "History" and "Law", the first personality facet is the Community. And the isolate number for a Community is got, generally, by the Geographical Device. In this case, Space is said to impersonate as Personality. This means that the apparent geographical isolate number should be treated and not ".". This is hidden in the case of the first level community number as its connecting symbol need not be written. But it is necessary to remember this when the community number consists of two levels of isolate numbers. For example, if the community is that of "the urban areas of the Madras (State)", the community number should be written as 4411,3 and not as 4411.3. This is assumed in what follows:

71 Subjects for Consideration

Let us next consider the following class numbers as constructed by ed 6(1960) of CC:-

Subject	Ed 6 (1960)	Ed 7(1962)
1 Legislature of Madras (State)in 1961	V4411,3.N60	V4411,3"N60
2 History of the Localities of Madras (State) in 1960	V4411,3.N60	V4411,9A"N60
3 Councils of the Local Bodies of Madras (State) in 1960	V4411,3,3.N60	V4411,9A,3N"N60
4 History of Madras (City) in 1960	V4411,3M.N60	V4411,M"N60
5 Council of the Corporation of the Madras City in 1960	V4411,3M,3.N60	V4411,M,3"N60

72 Homonym in Ed 6(1960)

The class numbers for subjects 1 and 2 are the same in Ed 6(1960). As stated in sec 17, a homonym is fatal in a classificatory language. The homonym is caused in this case by failure to take cognisance of a subject like "History of Localities" or "History of a Particular Locality" and the "Organs of its Local Body" turning up. Now, it is realised that the Government of a country will have as isolates in second level personality facet, its own organs such as Head, Executive, Legislature, and so on. At the same time, the Local Body of a city, town, or district will also have its own organs. A district is usually a regional division of a country and therefore, it gets individualised by the sharpening of the isolate in the first level personality facet itself. But it is not so with a city or a town. Other considerations make it helpful to get it individualised at the second level personality. Thus two different sets of isolates arise at the second level when the isolate in the first level personality facet is a country or a constituent state. Further, when the isolate at the second level is a city or a town, the organs of its Local Body can appear as isolates in the third level personality facet.

73 Solution by Telescoping of Facets

We have become familiar with this phenomenon; and we have found that the Method of Telescoping Facets meets the situation (P2;T1). In this method, we telescope two or more facets into an apparently single facet in the schedule. Such a telescoping exploits the formation of zones and sectors in an array as a result of the use of Mixed Notation. Till now we have had experience only with the telescoping of personality facets of successive levels within one and the same round. In this telescoping the Wall-Picture-Principle (E3) is used to decide the sequence of the different personality facets. The earliest possible level of facet is accommodated in one of the latest sectors — either the last sector in Zone 3 or even in a sector in Zone 4, if the number of possible facets to be telescoped warrants it. The successive later levels are accommodated in the successive earlier sectors. The oft-recurring last level is accommodated in Zone 2. This has resulted in considerable economy in the length of class numbers and at the same time in the retention of the capacity to accommodate several levels of facet in conformity to the Wall-Picture Principle (E3) and the Whole-Organ Principle (E4).

74 A Fault in the Schedule of Featured Space

While applying the Telescoping Device, a fault was discovered in the enumeration of the isolates in the second level space facets. As already stated in sections, these isolates are called Featured Spaces. In fact most of the isolates in this facet are physiographical features, as the schedule shows. Here is an extract from the schedule:

Isolate	CC: ed 6(1960)
1 Land (Geographic)	1
2 Subterranean	11
3 Surface	12
4 Desert	121
5 Cultivated	125
6 In relation to sea	13
7 Coastland	131
8 Cape	133
9 Delta	137
10 Inland	14
11 Valley	16
12 Mountain	2
13 City, town, village (Population cluster)	3
14 Water (Hydrosphere)	5
15 In relation to land (Sea water)	53
16 High sea	535
17 Land-sea	536
18 Lake (Fresh water)	54
19 River	6
20 Atmosphere	8

It is easily seen that all the items but 13 "City etc (population cluster)" are truly physical features. But 13 is of a different kind. It is unhelpful to provide a place for it among the conventional physical features.

75 Removal of the Fault in Ed 7(1962)

This fault is best removed by accommodating the "Population Cluster" outside Zone 2 which is occupied by conventional physical features. Zone 1 or Zone 2 should be thought of. It is here that the need for telescoping mentioned in sec 73 helps us to choose between Zone 1 and Zone 2. By the Wall-Picture-Principle(E3), a population cluster—that is, a city or a town or a village Local Body— should precede the organs of the Local Body. In other words the population cluster should form the first level personality facet and any of its organs the next level personality facet. Then, the telescoped schedule for second level personality should be

1	Head
2	Executive
3	Council
4	Party
6	Committees
8	Civil service
9A	Population cluster
A to Z	Individual Localities by Alphabetical Device.

As a result, the schedule for Second Level Space should be

1	Lands (Geosphere)
12	Surface
16	Valley
2	Mountain
5	Water (Hydrosphere)
8	Atmosphere
9A	Population clusters
9B	Cities
9C	Super-cities
9F	Medium cities
9J	Small cities
9M	Towns
9P	Villages
9T	Hamlets
A to Z	Individual Localities by Alphabetical Device

It is proposed to incorporate these ideas in ed 7(1962) of CC.

8 WORK TO BE DONE ON TIME FACETS

The provision of a separate connecting symbol for the fundamental category has removed a fault disclosed by the efficiency Table in the first orde arrays of time and space isolates. Here is the efficiency table:

Zone	Time	Space
2	Fallow	First level
3	First level	Fallow

81 Space Zones

The cells "2-Time" and "3-Space" have to be kept fallow if the same connecting symbol is used for time as well as space. But, with the use of different connecting symbols, the fallow cells can be occupied. Section 75 shows how the cell "3-Space" is brought into use. We have to find use for the cell "2-Time". Use should be found for Zone 1 of space facets of levels 1 and 2. Perhaps, the schedule for level 1 may be telescoped one, so that Zone 1 becomes level 2 when attached to Zone 2. Zone 1 may be given to isolates made of administrative divisions as distinct from regional division. So also, the schedules of level 2 may be telescoped, so that its Zone 1 goes to the third level when attached to Zone 2.

82 Time Zones

A difficulty was experienced when designing the schedule for the Second Level Time Facet or Featured Time as it is called. This schedule and the schedule of the units of time for private time had to be made to share Zone 1 in common. Accordingly a to n were assigned to units of time and p to z were assigned to featured time (P3). This had a cramping effect on both the schedules, apart from its being revolting to the idea plane. Now, we can release the whole of Zone 1 to the schedule of units of time in private time and accommodate the schedule of featured time in Zone 2 and in the penultimate sector of Zone 3. The schedule of the facet of featured time may be telescoped with the schedule of first level facet time.

83 Work for the Future

The details of all these possibilities should be worked out.

9 BIBLIOGRAPHY

Note 1: The author of each of the documents cited is S R Ranganathan.

Note 2: The first column gives the reference number occurring in the text. The second column gives the number of the section of the text, where the reference number occurs. The third column gives the reference with its locus in the case of articles.

C1	Sec 4	Common isolate. (Depth classification 3. An lib sci; 1;1954;75-80;sec 416-434).
E1	Sec 22	Elements of library classification; ed 3;1961;sec H12
E2	Sec 22	ibid; sec H5.
E3	Sec 73;75	ibid; sec N32.
E4	Sec 73	ibid; sec N35.
L1	Sec 21	Library classification:Fundamentals and procedure;1944; Sec 514.
O1	Sec 56	Optional facet in classification 1. (An Ind Lib Sci being Annals part of Abgila;1;1950; 35;sec 12).
O2	Sec 63	ibid 1;1950;36;sec 23.
O3	Sec 35	ibid;2;1952;186;sec 5755-5756. ibid 4. ibid 1;1950;97-107; sec 45 to 4563.
O4	Sec 4	ibid; being Report 2 to FID/C.
P1	Sec 14; 52;54	Prolegomena to library classification; ed 2;1957;sec 151.
P2	Sec 41	ibid; sec 3522.
P3	Sec 73	ibid; sec 367
P4	Sec 8	ibid; sec 45332 and 4534.
S1	Sec 41	Space isolate. Common isolat in documentation work. 4. Rev doc;24;1957;25-26;sec 5-56.
T1	Sec 73	Telescoping of facets and mixe notation. Rev doc;27;1960; 154-156.
T2	Sec 8	Time isolate. Common isolat in documentation work. 4. Rev doc;23;1956;75-76;sec

Paper B

POSTULATIONAL APPROACH TO DEPTH-CLASSIFICATION

DEMONSTRATION 2

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Mentions the new connecting symbol for T . Shows the Sharpening of facet. Illustrates the use of Common Property isolate. Examines the suitability of the schemes for the work in depth classification. Suggests ways by which the length of the UDC class numbers can be shortened.

1 INTRODUCTION

Since the first article in this series on demonstration was completed last year, Dr Ranganathan has finally decided to use the quote starter as the connecting symbol for [T]. The reasons for this are given elsewhere in this issue (R1). The list of abbreviations and the introduction given in the first paper on demonstration (R 2) are to be read along with this paper.

2 DEMONSTRATION

The subject of demonstration is chosen from one of the post-graduate theses in science accepted by the Madras University in 1957.

00 Abstract

Here is a short extract of relevant portion of the thesis by O Sundarama Reddy entitled:-

"Studies on the genetics of South Indian cattle with special reference to the inheritance of coat colour".

'Investigations have been carried out to find out the correlation between excretion of corticosteriods and the development of grey colour in Kangayam cattles.

Adult cattles of Kangayam breed are grey in colour, males darker than females. Kangayam calves are born red and assume the adult colour in a period of six months. A study of the colour patterns in 298 calves of both sexes and varying ages, points out that a time element is involved in respect of colour change. A tentative for Kangayam cattle as regards colour factors has also been suggested. In this breed of cattle, bulls excrete in their urine three times more homogentisic acid than cows and bullocks, while new born calves excrete no acid at all. The administration of vitamin C to the grey animals (Adults) caused the immediate disap-

pearance of the acid in urine but it soon reappeared thereafter. It is tentatively postulated that the excretion of homogenitisic acid in these animals is in some way connected with the maleness and melanogenesis.
A hypothesis is put forward that androgens have a positive role in the development of grey and black colours in their hairs. While normally red calves begin to turn grey at 2 months and assume full grey colour in about six months, administration of testosterone phenyl propionate provoke the appearance of grey colour on the fourth day of the injection and the assumption of full grey in 18 days. It was found, however, in another set of studies that C-22 steriods (cortone) were not concerned in the colour changes observed in the Kangayam calves.'

Step 0 Raw Title

"Studies on the genetics of South Indian cattle with special reference to the inheritance of coat colour".

Note Above is the raw title — title found in the document which happens to be a thesis.

Step 1 Expressive Title

Studies in [Animal Husbandry] on the genetics of [Kangayam cow] of South India with special reference to inheritance of coat colour.

Note 1 The terms within the square brackets have been supplied to fill up the ellipses.
2 The (BC) is evidently 'Animal Husbandry'. Hence it is supplied.
3 The abstract clearly shows that the studies are in genetics.
4 Kangayam breed of cattle is the breed studied in this thesis. It is one of the breeds of cattles in South India famous for cows. Hence, it is supplied.

Step 2 Kernal Title

Animal Husbandry Genetics Kangayam Cow Inheritance Coat Colour

Note The above kernel terms are got after dro ing the redundant words and retaining onl the pertinent words.

Step 3 Analysed Title

Animal Husbandry (BC) Genetics [E] Kangayam cow [P] Inheritance [2P] Coat [P2] Colour M

Note 1 It is helpful to spot out and identify the manifestations of the (BC) and the five fundamental categories in the sequence (BC), (T), (S), (E), (M), and (P).
2 The (BC) is Animal Husbandry and hence the contraction is put after the kernel term.
3 There is no [T] in the subject of document.
4 There is no [S] in the subject of the document.
5 'Genetics' is postulated and scheduled as (E) isolate in practically all the schemes of classifications. Therefore, the contraction E has been put after the kernel term 'Genetics'. Further it is the only manifestation of (E).
6 Colour is obviously a property of Coat. It has been shown (R3) that it is helpful to deem a property to be a manifestation of matter.
61 Applying the Wall- Picture- Principle to the kernel terms 'Colour' and 'Coat, we get the sequence 'Coat' and 'Colour'. Therefore Colour should immediately follow Coat. Coat will be shown to belong to the first round therefore Colour should also belong to the same round. Thus the contraction [M] has been put after it.
7 Because there is only one manifestation of (E), therefore there can be on only two rounds.
Applying Wall-Picture-Principle to the kernel terms 'Genetics' and 'Kangayam cow' we get the sequence 'Kangayam cow' and 'Genetics'. Therefore the term 'Kangayam cow' belongs to first round.
71 Applying the Whole- Organ-Principle to the kernel terms 'Kangayam cow'

and 'Coat', we get the sequence 'Kangayam cow' and 'Coat'. Therefore, 'Kangayam cow' belongs to the first round and first level personality and 'Coat' belongs to the first round second level personality. Thus the contractions [P] and [P2] have been put after the terms 'Kangayam cow' and 'Coat' respectively.

72 The only kernel term remaining is 'Inheritance'. Its position is fixed by applying the Actand- Action- Actor- Tool- Principle. to the kernel terms 'Genetics' and 'Inheritance'. Because the term 'Inheritance' is the agency or actor which is responsible for Genetics, it should follow Genetics. Therefore, 'Inheritance' belongs to the second round. Thus the contraction [2P] has been put after it.

Step 4 Transposed Title

Animal Husbandry (BC) Kangayam cow [P] Coat [P2] Colour [M] Genetics [E] Inheritance [2P].

Note 2 By the postulate of sequence, the kernel term 'Animal Husbandry' has been brought to the first position.

3 Other kernel terms have been transposed according to this postulate. In this transposition we are guided by the contractions put after the kernel terms.

Step 5 Title in Standard Kernel Terms

Animal Husbandry (BC) Kangayam cow [P] Skin [P2] Colour [M] Genetics [E] Heredity [2P].

Note 7 The term 'Kangayam cow has been retained as it is the term that distinguishes and singles out a particular breed of cow though it does not occur in the schedules of schemes of classification.

71 The term Coat has been replaced by the standard term Skin.

72 The term Inheritance has been replaced by the standard term Heridity.

Step 6 Title in Kernel Numbers

Step 6C According to CC

KZ (BC) 311K [P] 87 [P2] cR8 [M] 6 [E] 1 [2P].

Note 2 The (BC) number KZ has been taken from the schedule of Main classes of CC.

5 The isolate number 6 for Genetics has been taken from the schedule for [E] in chapter KZ of Part 2 of CC.

6 The isolate number cR8 for colour does not exist in the published volume of CC, but has been taken from the tentative schedule of common property isolate published in number 1 of 7th volume of this journal.

7 The isolate number 311K for Kangayam cow does not exist in the schedules of published volume of CC. The schedule in the chapter KZ of part 2 of CC gives only isolate number 311 for cow. The isolate number for the particular breed of cow known as Kangayam cow has been got by sharpening the isolate number 311 with the help of alphabetic device according to the canon of Alphabetic mnemonics.

71 The isolate number 87 for skin has been taken from the organ schedule in chapter L of part 2 of CC.

72 The isolate number 1 for Heredity has been taken from the [E cum 2P] schedule of chapter G of part 2 of CC.

Step 7 Synthesised Class Number

Step 7C According to CC

KZ311,87;cR8:61

Note The contractions describing the nature of the kernel numbers have been replaced by the appropriate connecting symbols according to the pertinent postulates of the notational plane.

Step 8 Verification

Step 8C According to CC

The result of the facet analysis of the class number arrived under step 6C is as follows:

KZ (BC) 311K[P] 87[P2] cR8[M] 6[E] 1[2P]

The digit by digit interpretation of the class number arrived in step 7C is as follows:

K	= Part of the fused link (unsought link)
KZ	= Animal Husbandry (sought link)
KZ3	= Food yeilding animals (sought link)
KZ31	= Secreting animals (sought link)
KZ311	= Cow (sought link)
KZ311K	= Kangayam cow (sought link)
KZ311K,	= False link as it ends in a connecting symbol (unsought link)
KZ311K, 8	= unsought link
KZ311K, 87	= Skin of Kangayam cow (unsought link)
KZ311K, 87;	= False link as it ends in a connecting symbol (unsought link)
KZ311K, 87;c	= Part of the fused link (unsought link)
KZ311K, 87;cR	= Part of the fused link (unsought link)
KZ311K, 87;cR8	= Colour of the skin of Kangayam cow (sought link)
KZ311K, 87;cR8:	= False link as it ends in a connecting symbol
KZ311K, 87;cR8:6	= Genetics of the colour of skin of Kangayam cow (sought link)
KZ311K, 87;cR8:61	= Genetics of the Heredity of the colour of the skin of Kangayam cow (sought link)

This is equivalent to the expressive title of the document. Q E D

Step 6 Title in Kernel Number

Step 6U According to UDC

636 (BC) 28[P] 591.176[P2] 575.061.6 [E cum 2P] ? [M]

Note 2 The (BC) number 636 has been taken from the published volume of UDC. Truly speaking 636 stands for Stock Breeding, Livestock, Animal Produce, Pets etc. The generic term for these is Animal Husbandry.

5 The isolate number 575.061.6 has been taken from the Biology schedule of UDC It stands for the Heredity of Colour. The published volume of UDC does not enumerate Genetics. The isolate number 575 stands for Heredity and Variation. With this provision 575 can simultaneously be interpreted as

Heredity and Variation. This results in Homonym which is a serious fault in any scheme of classification and which should be scrupulously avioded. Further, Heredity does not stand at par with Genetics. Hence it is not possible to provide close fitting isolate number to [E cum 2P].

6 There is no isolate number for Colour. The term Colour has been enumerated at two places in the schedules of the published volume of UDC. The isolate number 591.176 stands for 'Skin, Colour, Pigment etc'. The other place that it finds is 575.061.6 which means the Heredity of Colour.

7 The isolate number for Kangayam breed of cow does not exist in the published volume of UDC. The isolate number 636.28 represents American, Asiatic and African breeds. It is not coextensive with Kangayam breed of cow.

71 The isolate number 591.176 for skin along with colour has been taken from the published volume of UDC.

Step 7 Synthesised Class Number

Step 7U According to UDC

636.28:591.176:575.061.6

Step 8 Verification

Step 8U According to UDC

The result of facet analysis is given below:

636 (BC) 28[P] 591.176[P2] 575.061.6[E]cum 2P]

The digit by digit interprelation of the class number is as follows:

---

6 = Applied sciences, Medicine, Technology (unsought link)

63 = Agriculture, Forestry, Stock Breeding, Animal Produce, Hunting, Fisheries (sought link)

636 = Stock Breeding, Livestock, Domestic Animals, Pets (sought link)

636. = False link as it ends in a non significant digit (unsought link)

636.2 = Cattle and other large numinants (sought link)

636.28 = American, Asiatic and African breed (sought link)

636.28: = False link as it ends in a connecting symbol (unsought link)

636.28:5 = Fused link

636.28:59 = Fused link

636.28:591 = Fused link

636.28:591. = Fused link

636.28:591.1 = Fused link

636.28:591.17 = Fused link

636.28:591.176 = Skin, Colour etc of American, Asiatic,African breed (sought)

636.28:591.176: = False link as it ends in a connecting symbol (unsought link)

636.28:591.176:5 = Fused link

636.28:591.176:57 = Fused link

636.28:591.176:575 = Fused link

636.28:591.176:575. = Fused link

636.28:591.176:575.0 = Fused link

636.28:591.176:575.06 = Fused link
636.28:591.176:575.061 = Fused link
636.28:591.176:585.061. = Fused link
636.28:591.176:575.061.6 = Heredity of Skin, Colour etc in American, Asiatic, African breeds of cattle (sought link)

This is not equivalent to either the expressive or the raw title of document, because the co-extensiveness in [P], [M] and [E] cannot be reached with the help of the existing schedules in the published volume of UDC.

3 COMPARISON

31 Versatility

The above demonstration illustrates that both the schemes — CC and UDC do not enumerate all the isolate numbers that are needed for classifying documents in the realm of Depth Classification. However, CC has greater versatility than UDC. There are many factors that endow this greater versatility to CC. The chief among these is the faceted structure of CC. This structure is not only predominant in the idea plane and verbal plane, but also in the notation of CC. If UDC decides to incorporate the faceted notation it will be more versatile for the work in depth classification.

32 Autonomy for Classifier

The class number constructed with UDC is not coextensive with the thought contents of the document. Many of isolate numbers are not close fitting. It is not possible for the classifier to assign close fitting and coextensive class number. The reason for this failure to assign close fitting class number is traceable to the limited amount of autonomy for classifiers granted by UDC. On the other hand, CC has given autonomy to classifier in full measure In fact CC has laid down certain rules and given certain devices by which an existing isolate number can be furher sharpened or a new isolate number can be formed. This results in the effectiveness of the service. That is to say, classifier need not refer particular document to classificationist; hold the document till a coextensive isolate number is provided; or provide isolate numbers that are not coextensive with the thought contents.

33 Number of Digits in the Class Number

Scheme	Number of digits
UDC	24
CC	16
Difference (UDC-CC)	8

The above table shows clearly that UDC class number has 8 more digits than that of CC. This is about 50% more even without reaching the coextensiveness.

34 Cause of Length of UDC Class Number

The difference of 8 digits is on account of that defects in the structure of the notational plane of UDC. The extra eight digits are on account of the following reasons:-

1	The dots without any semantic value	4
2	The use of a short base	1
3	Telescoping of [P] and [E] in an array	2
4	Non recognition of common isolates that can be used for more than one (BC)	3
	Total of digits saved	10

35 SUGGESTION

Real economy in the notation of UDC can be effected by a proper and scientific re-organisation of its notational plane. This is clear from the section 34. The class number of UDC, which is not coextensive, can be reduced by ten digits by making necessary changes in the notation of UDC. It can further be shortened by incorporating new and useful concepts that are being developed and tested by Indian School. By granting more autonomy to classifier, by giving a proper place to fundamental categories in its notation and by introducing a longer base, UDC can be made to meet effectively the demands of depth classification in documentation.

BIBLIOGRAPHY

Note 1 The first column gives the reference number

2 The second column gives the section of the article where the reference is made.

3 The third column gives the locus.

R1	sec 1	Ranganathan (S R) Connecting symbol for Time and Space in CC. An lib sc 1961, 8, 1-9.
R2	sec 1	Ranganathan (S R) and Raizada (A S) Postulation approach to depth classification: Demonstration 1 An lib sc 1960, 7, 77-89.
R3	sec 2	Ranganathan (S R) Elements of library classification. Ed 3. 1961.

Paper C

INTERNATIONAL CONFERENCE ON CATALOGUING 1961

S R RANGANATHAN

Points out the futility of depending on title-entry for literature-search. Traces the present dependence on an unhelpful multiplicity of rules for the rendering of a name-of-person or for the choice and rendering of corporate author's name to an inheritance from the past. Recommends the conservation of cataloguing man-power by the international adoption of the Indian Standard for Author Statement on back of Title-Page. Recommends also the consideration of the best way of bringing to the notice of a reader all the books related to the book engaging his attention at the moment.

0 TOOL FOR LITERATURE-SEARCH

A library-catalogue is a tool for literature-search. Three kinds of catalogue entries may be considered — Title, Author, and Subject Entries respectively.

1 TITLE ENTRY

A simple class of literature-search is the search for a specific document. If its title is crisp and short amounting to a proper name which easily sticks to the memory without distortion, title entry alone would prove sufficient. The title entry can be made without any elaborate rules if the Canon of Ascertainability [4] is allowed full sway by the title-page mentioning the title. But, titles of such a proper-name-variety have now become too few. Therefore, title entry is not of sufficient help in the search for modern documents.

2 PERSONAL AUTHOR ENTRY

In the absence of a proper-name-like title, the name of the author - if it is a name of person — has the best chance to stick to the memory. Therefore, the author entry has much service to give.

21 Rules for Rendering

But even if the title-page mentions the name of the author unequivocally and thus allows full sway to the Cannon of Ascertainability [4], the author entry cannot be made without elaborate rules. There are several reasons for this.

211 Family Name

As a means to minimise the incidence of homonyms, a modern name-of-person is made multi-worded. In most of the modern Anglo-Saxon and German cultural groups, the last word denotes the family name; and it satisfies the Canon of Prepotence [5] more than any other word. Therefore, rules have to be provided to permute the words in the name for use as heading in the author entry, so as to make the last word in a name-of-person the first word in the heading. This rule came into vogue in 1959 [20].

212 Compound Family Name

A simple rule prescribing "Last word first" does not however always prove sufficient. For, in the other cultural groups of the West, the last two or three words are to be deemed to be a fused cluster of words and the cluster as a whole has to be brought up to the first place in the heading. This is due to the indicence of bare compound family names, or single or compound family names with auxiliary words as irremovable attachments. The problem gets more complicated by the migration of such multi-worded family names into cultural groups otherwise free from multi-worded family names. ALA finds 24 Rules necessary to meet the case. CCC has to do similarly. Even such elaborate rules gven on this topic [1;11] are hardly sufficient to a cataloguer not born in or not thoroughly familiar with the specific cultural group.

22 East and South-East Asian Name-of-Person

In China, family name originated as early as 3,000 B C. But it occurs as the first word in a name-of-person. Hence, the "last word first" rule does not apply, here.

Family name was made compulsory by an Imperial Edict of 1870 in Japan and by King Rama VI in 1916 in Thailand. Here, the family name occurs last in a name-of-person.

In Viet Nam, Chinese cultural pressure introduced family name at the beginning. But since no more than a few hundreds of such family names are in use, they do not satisfy the Canon of Prepotence 5 . Therefore, the present trend is rightly to promote the Given Name from the last to the first position so as to make it the Entry Word in the heading.

These variations in practice and the rules on them cannot be of help to one unable to identify the cultural group to which the name-of-peson belongs.

In an Indonesian name-of-person, presence of removable honorific words adds to complication. Rules cannot be of sufficient help except to a cataloguer belonging to or fully familiar with the cultural group[21].

23 Indian Name-of-Person

In India, five linguistic cultural groups can be recognised from the angle of the name-of-person.

231 Tamil Name

In Tamil, family name has not come into vogue. Personal name by itself or personal name followed by another word of the nature of an irremovable attachment occurs last. This word or word-cluster has to be made the Entry Element and promoted to he first position in the heading. But this rule is not of much avail to one not born in the Tamil cultural group or fully familiar with its naming-practices. I have giver a list of irremovable attachments [10]. Even then, cataloguers do flounder on them. A further complication is caused by the presence of removable attachments also in a name-of-person.

232 Malayalam, Kannada, or Telugu Name

In Malayalam, Kannada, and Telegu, family name occurs in a name-of-person. But it occurs at the beginning; and it does not stasfy the Canon of Prepotence [5]. Therefore, the personal name or the cluster made of personal name and irremovable attachment has to be made the Entry Element and promoted to the first place in the heading. But this rule is not of sufficient help to one unable to recognise the cultural group from the mere name.

233 Marathi or Gujarathi Name

The Marathi and the Gujarathi cultural groups had a fairly prepotent set of family names for a long time. These were brought into use in the title page only early in the ninteenth century. When in use, it occurs as the last word. It may also be compound. Thus all the difficulties met with in Western names may also be expected here. Subject to this warning, the rule "last word first" may work. But in the title pages of before-nineteenth century, where family name does not occur, there are usually two words -- the Given Name of the person first and the Given Name of the father last. In these cases, the rule "last word first" gives wrong results. These hurdles cannot be got over except by one born in or fully familiar with the cultural groups concerned.

234 Punjabi or Hindi Name

The Punjabi and the Hindi cultural groups appear to be in two minds about the adoption of Family Name. About a century ago, some authors began to adopt it. This was perhaps in imitation of the West. But the words available for use as Family Names are far too few to satisfy the Canon of Prepotence [5]. Moreover, after the Independence Movement began, the imitation of the West came to be abandoned by some.

For example, the present President of India calls himself only by his given name Rajendra Prasad; he no longer uses the Family Name Srivastava. The number of persons abandoning the use of Family Name is increasing in number. When the Family Name is not used, the simple rule "last word first" gives wrong results. For, the Given Name is usually split into and written as if it were two independent words. But in usage, they have to be taken as a word-cluster which should be used in the heading as it is without permutation. "Rajendra Prasad" should not be written in the heading as "Prasad (Rajendra)". Decision on this point is risky for one not born in or fully famiiiar with these cultural groups.

235 Bengali Name

The Bengali cultural group adopted the use of Family Name early in the nineteenth century. However, the number of words available for use as Family Name is too small to satisfy the Canon of Prepotence [5]. There is also the complication due to two-worded Family Names. Apart from this, the Bengal Library Association has recently expressed the view that the Given Name should be used as the entry element and not the Family Name. A similar view was expressed by some Bengali scholars and authors even as early as 1949.

236 Arabic or Persian Name

The Arabic and Persian cultural groups have names of many words -- some substantive and some auxiliary. The Given Name usually comes first. But the Entry element is often made of the Given Name and a few other elements. The catalogue codes have elaborate rules on their rendering. These rules have to provide for local variations. The most disturbing local vairation is the one found in India and Pakistan. The rules and the exceptions to them are too many to be of real help to any cataloguer not born in or fully familiar with the cultural subgroups.

24 Resolution at Source

The finding in my Report to Unesco [22] has been that no useful purpose is served by failing to settle the issue at the every source and thus wasting man-power in solving a problem, created by failure to settle the issue at the very source. This is indeed an inheritance of the past. This inheritance should be completely cut out hereafter. This suggestion has been followed up by the Documentation Section of the Indian Standards Institution [2]. This body has laid a simple standard for the back of the title-page of a book printing in small type the name of the author containing.

1 Only the words that are irremovable;
2 These words in the sequence in which they occur in usage;
3 The Entry Element alone in a dominant type -- say, antique cap and lower case;
4 The other words (Secondary Element) printed in less dominant type, say, Roman cap and lower case; and
5 The year of birth added after the name within circular brackets.

If any author has sentimental resistance to disclose the year of birth, he may give any year as his identification year. Persons refusing to give even such an arbitrary year will be too few to affect the efficacy of the standard.

25 Resolution of Homonyms

The year of birth is prescribed to resolve homonymns in anticipation. In the past, the number of authors added to the list each year was small enough for homonyms to be resolved merely by the addition of the Secondary Element. But now that limit has been passed. There is first the cumulation of the authors of the past. Secondly, more authors appear now in a country each year than in the past. Thirdly, authors are now coming up in almost every country in the world. Fourthly, quite a large number of these numerous authors are too important for any country to neglect any of them or any of their works. In the light of the experience gained during the last six years, the standard in question is being revised and improved upon.

26 Simplified Rule for Personal Author Heading

If the above mentioned standard for the Author Statement on the back of the title-page is universally implemented, the many Rules for the Rendering of Personal Author Heading can be reduced to the following single Rule.

"If the back of the title-page of the book conforms to the standard for Author Statement [2], the Entry Element is to be the word or word-group printed in a dominant type-face in that Author Statement; the Secondary Element is to be the rest of the word(s) in it; and the further Individualising Element is to be the year given in the said Author Statement".

27 Appeal to the International Conference 1961

My appeal to the 1961 International Conference on Cataloguing is to concentrate on the adoption of a standard such as the one given in section 24. This will ensure smooth and unequivocal sailing in respect of all future books and the problem of the older books will liquidate itself within a short period.

3 CORPORATE AUTHOR ENTRY

Till the beginning of the nineteenth century, any book without a personal author was taken to be anonymous. The heading for such a book was sometimes the mysterious term "Anon". Sixty years ago a librarian remarked that "Anon" was the most prolific author in the world. The number of "Anon" entries soon became great enough to see the wisdom of omitting the heading "Anon" altogether and using the title of such a book as the heading for its entry. But unfortunately such books have the most diffuse and verbose titles, with the first word hardly sticking to memory. Moreover, during the last fifty years, the number of books brought out by governments on their own collective responsibility for their thought-content and expression has grown by leaps and bounds. This has led to the recognition of Corporate Authorship.

31 Kinds of Corporate Author

The following four kinds of corporate author can be recognised [7]:-

1 Government (with sovereign power);
2 Local Body (without sovereign power) exercising local functions delegated by government. This too is taken in catalogue practice as if it were a government;
3 Institution not forming an organ of a government as prescribed by the constitution of the country or by executive or administrative decision; and
4 Conference including spontaneous and involuntary collection of a group of people for joint delibration, but excluding a conference of the members of a Governmental body or an institution.

Any organ of 1, 2, 3 or 4 also is deemed to be a corporate author.

32 Standard for Back of Title-Page

The recognition of Corporate Authorship has created its own cataloguing difficulties. These difficulties are caused mainly by the title-page carrying a name-of-person at the conventional place for name of author, in addition to there being in the make up of the title-page evidence of corporate collective authorship. In such a case, it is best to resolve the difficulty at the source itself, by omitting the name-of-person in case of corporate authorship, and by retaining the name-of-person and indicating that the corporate body mentioned on the title-page is merely a sponsor or a publisher and not an author. Perhaps, aesthetic and other considerations may not allow the title-page itself to give this help to the cataloguer. Therefore, the Documentation Section of the Indian Standards Institution is prescribing the standard that the Author Statement on the back of the title-page should indicate the heading to be used viz name-of-person or name of corporate body as the case may be.

33 Work for the International Conference 1961

My appeal, here again, is that the International Conference of 1961 on Cataloguing should take some forward step towards adopting an international standard for the Author Statement on the back of the title-page of a book of corporate-authorship. This will eventually liquidate the difficulties in the rendering of the name of a corporate author in the heading.

34 Conflict of Authorship

The above standard to facilitate the rendering of the name presupposes the unerring choice of the correct author of a book distinguishing between the cases of a corporate body authoring, sponsoring, or publishing it. But this problem is not as simple as it looks. Five possible conflicts are possible in the choice of author, viz,

1 Person vs person;
2 Government vs person;
3 Government vs Institution;
4 Person vs Institution; and
5 Government or Institution vs Conference.

These are fully discussed in my CCC [9]. The suggestions given there are only tentative. At best, they can form the working paper for an international discussion. I wish that the 1961 International Conference takes up this discussion and brings it nearer to an agreed solution.

35 Organ as Heading

Some variance is observed in the rendering, in the heading of an entry, of the name of an organ of, say, a government. One school advocates the use of multiple heading. According to it, the heading should consist of the name of the whole government (that is, of its territory) as the Main Heading, and the names of the specific organ functioning as the author proper as the Second or the Third etc Heading according as it has a distinctive name or needs the interposition of its parent organ to make it distinctive [12]. On the other hand, the other school uses the name of the specific organ directly as the Entry Element, and the name of the government, parental organ etc merely as an Individualising Elements to resolve homonyms. The 1961 International Conference will do well to discuss these two opposite practices with a view to arrive eventually at an agreed uniform practice.

36 Entry Element in Organ as Heading

Whether the name of an organ is used as Main Heading or as the Second Heading, or the Third Heading in a multiple heading, it is usually a multi-worded term. All the words in it do not have equal potency. Some indicate the jurisdiction or purview of the organ. Others are only generic words such as Board, Bureau etc. The sequence of the words is not stable from book to book even in respect of the same organ of the same government or any other corporate body. In view of this, CCC recommends the use as Entry Element, of the word or word-group in the name of the organ, which specifies the jurisdiction or purview of the organ [13]. There are sometimes difficulties in the actual implementation of this choice [3]. These difficulties are traceable to the loose construction used by the corporate author in naming the jurisdiction or purview and to defects in the natural language itself. It occurs to me that the 1961 International Conference may turn its attention to the first of these difficulties and arrive at standards for naming the organ. Then, the Governments or other corporate bodies, as the case may be, may take their respective librarians for advice in the naming of the organ in the author statement to be printed at the back of the title-page.

4 RELATED DOCUMENTS

Another help in literature-search expected from a library catalogue or a bibliography is to bring to the notice of the reader all the documents related to a specific document engaging his attention at the moment. A document B may be related to a document A in one of several ways:

1 A and B may belong to the same class;
2 B may belong to a sub class or a host of class of the class of A ie they may have Chain Relation;
3 B and A may belong to coordinate class ie they may have Array Relation;
4 A may be a classic [18] and B may be related to A as a commentary, a translation, a criticism, etc;
5 A may be a pedestrian book — non-classic [6] — and B may be a review of A or a reply to A or may have some other relation where it is a help to have A and B in juxtaposition in the shelf and to have the main entries of A and B in juxtaposition;
6 A may be a pedestrian book and B may be an Associated Book — that is, it may have some other relation to A not making it very necessary to bring together either on the shelf or in the sequence of main entries, but making it desirable for he catalogue entry of any one of these merely remind the reader of the existence of the other; and
7 A and B may both belong to the same publishers' series or a pseudo series [8].

41 Related Through Their Subjects

In categories 1 to 3 of section 4, the books are related by the subjects. In a classified catalogue, their main entries are brought into helpful mutual relation by their class numbers. This can be reinforced by Feature Headings formed by Chain Procedure 14 . In a dictionary catalogue, entries of category 1 are brought together by their Specific Subject Entries. In this respect, the Dictionary Catalogue is as efficient as the Classified Catalogue. But entries of categories 2 and 3 are linked in the Dictionary Catalogue only distantly by See also Subject Entries. In this respect, the Dictionary Catalogue is not as efficient as the Classified Catalogue.

42 Classics and Their Related Books

If the Scheme of Classification in use admits of Classic Device [19] and converts a Classic and each of its commentaries into a class and its sub classes, their main entries in a Classified Catalogue are automatically brought into juxtaposition and the main entries of all the editions, translations etc. of a particular class or a particular commentary are brought together by their respective Book Numbers, if the Book Number is organically and functionally designed as in Colon Classification. But, a Dictionary Catalogue has to connect them together only in a distant way through See Also entries.

43 Pedestrian Book and Its Reviews, Replies, and Criticisms

The Book Number in Colon Classification has a facet to indicate Review, Reply, Criticism, etc of a pedestrian book [17]. Therefore, the main entries of such books are automatically brought together in the Classified Catalogue. In the Dictionary Catalogue, it may be possible to bring them together at the point of Specific Subject Entries by a complex provision to introduce subdivisions to the Specific Subject Heading of the Pedestrian Book concerned. To avoid the complexity of such a rule, one may depend on the distant linking by Class Reference Entries.

44 Associated Book

In the case of an Associated Book alone, the CC prescribes distant linking by Special Notes [15] as in Dictionary Catalogue.

45 Books Belonging to a Series

Lastly, it is possible to list together all the books belonging to the same publishers' series or pseudo series by a Series Entry [16]. This is only an Added Entry.

46 Suggestion to 1961 Conference

It may be helpful for the 1961 International Conference on Cataloguing to examine the problem of Related Books in respect of Pedestrian Books. The entries linking them may have to be left to the Canon of Local Variation. But what needs discussion is the best way in which a library catalogue or a bibliography should link up their entries if it is desired by a library to link them. And Special Libraries should certainly link them.

5 SUBJECT HEADINGS

The rate at which books are being produced in several countries to-day gives ever-increasing weightage to Subject Entry and, for this purpose, to Subject Heading. Moreover, the language barrier is gaining in intensity as a result of the countries of Eastern Europe, Asia, and Africa having begun to produce books in their own languages. Here, the subject entry does a preliminary sifting to a great advantage. Help is greatest when the specific subject entries are arranged systematically by class numbers as in the Main Part of the Classified Catalogue and are fitted with helpful Feature Headings. Then a reader may pick out just the few books of his interest, and get an abstract of it in his own language in the first instance, and if worth while, get a fuller translation made. This would lead to a considerable economy without violation of the Laws of Library Science. This is a vital problem in a Special Library. The reader may also need the help of alphabetical subject heading to land himself easily at the right spot of the Classified Part. The Chain Procedure of the Indian System of Cataloguing gives at once the Feature Headings of the Classified Part and the Subject Headings of the Alphabetical Part as fairly simple derivatives from the Class Number [23]. Perhaps, this very important problem will add too much burden to the 1961 Conference. It may have to be taken up at a later conference.

6 BIBLIOGRAPHY

Note:- Column 1 gives the serial numbers of the reference, as it is put within brackets in the appropriate place in the text of the paper.

Column 2 gives the number of the section of the text of the paper in which the reference is made.

1	Sec 212	American Library Association. Cataloguing rules for author and title entries. Ed 2. 1949. Sec 38 to 41B.
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4	Sec 1 & 21	Ranganathan (S R). Classified catalogue code. Ed 4. 1958. Sec 021.
5	Sec 211, 22, 232, 234, 235	Ibid. Sec 022.
6	Sec 4	Ibid. Sec 1192
7	Sec 31	Ibid. Sec 122-1231
8	Sec 4	Ibid. Sec 1351-1354
9	Sec 34	Ibid. Chap 14
10	Sec 231	Ibid. Sec 18331
11	Sec 212	Ibid. Sec 1837-18373
12	Sec 35	Ibid. Sec 232
13	Sec 36	Ibid. Sec 236
14	Sec 14	Ibid. Part 3
15	Sec 44	Ibid. Sec 5143-5146;5523
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17	Sec 43	Ranganathan (S R). Colon classification. Ed 6. 1960. Sec 038.
18	Sec 4	Ibid. Chap 7.
19	Sec 42	Ibid. Sec 72-75.
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Paper D

RELATED DOCUMENTS :

CLASSIFICATION Vs CATALOGUING

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Emphasises the need for making Depth Classification for micro documents a proliferation of Basic Classification for arranging books, instead of an independent one. The main function of classification is stated to be the bringing together of related documents. Shows how the decimal fraction notation initiated by DC, and the classic device and the criticism facet of Book Number initiated by CC carry out this purpose. Inspite of UDC and CC disclosing facet and phase relations, the need for some help of the catalogue in these cases is pointed out. States the Collateral Relation, Series Relation and the Relation of Associated Documents are beyond the capacity of classification and that they should be left to the catalogue.

The following abbreviations are used:-

BC = Bibliographic Classification
CC = Colon Classification
DC = Decimal Classification
LC = Library of Congress Classification
UDC = Universal Decimal Classification

0 INTRODUCTION

01 Shelf-Arrangement as First Purpose

At the beginning of classification-practice, conventional books alone were classified. Classification was conceived by DC mainly as a means for arranging books of a library in a helpful sequence and to restore to its proper place any book taken out for use or other reasons. The designer of DC had intended it for arranging also "Notes in scrapbooks and index rerums, references to all these items, and indeed any literary material in any form" [D1]. In ed 13, DC did make some progress towards the fulfilment of this original intention. However the present editors of DC have categorically announced the purpose of DC to be only the first of the above mentioned ones. Indeed they say "The latest (16th) full edition of DC was prepared as a shelf classification, which could meet the needs of general libraries of any size though not necessarily those of special libraries . . . It is not intended for use for deep bibliographic analysis" [C1].

02 Macro and Micro Documents

In the world of classification, "Book" is now replaced by "Document". The latter is a generic term to denote books, parts of books, and contributions to periodical publications, symposia, and other forms of composite books. For convenience, the conventional book is called Macro Document. It is said to embody Macro Thought. A part of a book or a contribution is said to embody Micro Thought. It is itself called Micro Document. This movement was initiated by FID (International Federation for Documentation) as early as 1895. The importance of classifying even Micro Thought has been highlighted since World War II by the need for the prevention of dissipation of the research potential of the world, due to unintended and unwanted repetition of any piece of investigation. The latter is often due to ignorance of the same nascent thought having been already developed elsewhere and published as a micro document. To emphasise the need for classification readily laying bare micro documents, their classification is denoted by the term "Depth Classification". In contradiction, the classification sufficient for classifying conventional books or macro documents is called Basic Classification.

03 Depth Classification as Proliferation of Basic Classification

Aesthetics and the Law of Parsimony would urge that Basic Classification and Depth Classification should not be independent of each other. Depth Classification should be got out of Basic Classification by the necessary amount of proliferation. Reciprocally Basic Classification should be capable of the proliferation leading to Depth Classification. Apart from aesthetics and the Law of Parsimony, there is a practical reason for making Depth Classification merely proliferated Basic Classification. For it is by no means easy to say where Basic Classification ends and Depth Classification begins.

031 Shifting Boundary Line

The boundary line between them is not at all sharp; nor is it a fixed one; it goes on shifting with time. As time advances, conventional books begin to embody even what was originally passing for micro-thought embodied only in micro documents. This gradual shift in the universe of documents can be easily perceived by comparing the extension of the thought-content and the amount of its proliferation in the conventional books say of 1875, 1900, and 1950. This shift emphasises that Depth Classification of one period may itself figure as the Basic Classification of a later peiod. It is, therefore, necessary that a classification scheme should be so designed that it is equally suited for Basic Classification as well as Depth Classification.

04 Escapism

To have two different schemes for these two purposes at any epoch is wrong. It is nothing more than escapism unmindful of the difficulties thereby caused to the reading public — generalist as well as specialist — for whose benefit after all classification is designed. Viewed from this angle, the editors of DC are doing a wrong to the resiliance of the genius of the inventor of DC. For, they say, "It is not intended to be used for deep Bibliographic analysis . . . we should like to point out that the use of mixed notation and the punctuation mark other than decimal point, the grafting on to DC base numbers [Basic Classification of expansions and adaptations constructed according to faceted or other unauthorised patterns, are not in accord with Decimal Classification principles. Take DC or leave it, but pray do not tamper with it and then call us to account for the dissatisfaction you find in the results" [C2]. What a family resemblance to the attitude of the professional priesthood with its inexorable bigotry, narrowness, and sabre-rattling

05 Over-All Purpose of Classification

What follows is based on the assumption that the over-all purpose of classification is to bring to the notice of a user all the documents related to the particular document of interest to him at the moment. This purpose need not be inconsistent with the purpose of helpful shelf arrangement. Indeed helpful shelf arrangement itself is made only to bring together related documents on the shelf.

06 Growth of Classification

Classification should then continuously endeavour, by adaptation and expansion, to recognise the implied relationship of all kinds among documents. Classic device, facet analysis, and phase analysis — being developed since 1925 — are nothing more than helps to this purpose, even as decimal fractional notation was designed in 1879 as a first step in helping the self-same purpose.

07 Kinds of Relation among Documents

We shall now enumerate various possible kinds of relation among documents. We shall then examine how classification has progressively developed devices to bring such related documents together. We shall also see where classification has not yet succeeded in doing so and how the help of the catalogue has to be invoked to meet such cases.

The following table gives the different kinds of possible relation between documents, which can be brought together by classification itself or which have to be left to the care of cataloguing in the present stage of development of classification. The table gives also the scheme of classification which achieved the result first and the device designed for its achievement. It further gives the device designed by cataloguing to achieve the result in the cases beyond the power of classification.

Relation	Device	Scheme of Classification, first to adopt the Device
1 Chain or array relation	Decimal fraction notation and Enumeration	DC
2 Classic and its related documents	Classic device	CC. And BC to a limited extent
3 Facet relation	Facet device and Class Index Entry	UDC to some extent. And CC in full measure
4 Phase relation	Phase device and Class index entry	UDC to some extent. And CC in full measure
5 Pedestrian document or Pseudo-Classic and its related documents	Criticism facet in Book Number	CC
6 Collateral relation	See also entry	None
7 Documents belonging to a series or a pseudo-series	Series note and entry	None
8 Associated document	Associated document note and entry	None

1 CHAIN OR ARRAY RELATION

Practically all the schemes, beginning with Brunet, bring together on the shelf all coordinate Classes in an array in the measure of their degree of filiation. Indeed this is the minimum to be satisfied by any scheme of classification. The degree of filiation is determined by the idea plane. The notational plane implements it with the aid of ordinal numbers designed to answer the enumerated sequence. DC was virtually the first scheme to exploit the versatility of decimal-fraction-notation in implementing in the notation plane, the findings of idea plane in regard to chain relation among classes, in the measure of their degree of successive subordination. To quote DC, decimal-fraction-notation means "simply that heds, ar groupt and numbered with common arithmetic figures used decimaly" [D2] The literary warrant of 1875 made the decimal fraction device a necessity. Therefore the DC designed it in 1876. All the schemes after DC, except LC, have adopted the decimal fraction device to bring together documents in chain relation. The restriction to arithmetical figures has since been removed. It has been possible to do it easily. For, it is possible to introduce any new digit such as a letter or a punctuation mark in the scale of original numbers [R11].

2 CLASSIC AND ITS RELATED DOCUMENTS

21 Classic Device

CC was the first scheme to design the Classic Device for "bringing together the different editions including translations of a classic, the different editions including translations of each of its commentaries, sub-commentaries of each of them, and so on, and of securing that the group of sub-commentaries of a commentary is in juxtaposition to the commentary, that the group of commentaries of a classic is in juxtaposition to the classic, and that the group formed of each classic in a class is in juxtaposition to the groups of other classics in the same class"[R2]. The extraordinarily rich literary warrant of families of Indian classics made this device a necessity. Therefore the CC designed it.

22 Limited use in BC

BC is aware of the problem. Its schedule 6, appearing just after the class WG Grammar, provides the following isolates to individualise a classical work:-

, K Chief Work; Criticism, Interpretation, Appreciation
, NA Work of Secondary Importance
, O Other Works

This device is provided only for a limited number of subjects. In other words classic device is in an insipiant from in BC.

23 Quasi Class

The effect of classic device is really to convert a work into a class. To indicate that this kind of class is forcedly improvised to bring related documents together, such a class is called a Quasi Class. Sacred books and works in the Basic Class "Literature" have been treated as Quasi Classes in many schemes of classification. But no scheme other than CC has succeeded so far in bringing together all the related documents of a classic with the help of class number. Therefore those schemes have to invoke the aid of the catalogue to bring out this relation. The catalogue has to use a Cross Reference Entry for this purpose.

24 Related Periodical Publications

CC converts a periodical publication also into a Quasi Class. By a device similar to that of Classic device, CC is thereby enabled to bring together on the shelf different periodical publications on one and the same subject — that is, in one and the same ultimate class — sponsored by one and the same learned body or agency. The literary warrant in the universe of such related periodical publications has of late increased so much that it has made this device a necessity. CC was the first to carry it out. The Retrospective directory of Asian Periodicals [R12] (furnished to UNESCO in 1954 but not yet published by that body), has demonstrated the possible use of this device in UDC and the helpful result flowing from it.

3 FACET RELATION

31 DC

About 1875, many of the books presented only a single facet in addition to the basic facet. Books presenting two facets were rare. Therefore it was possible for DC to give coordinate status to all the possible facets that can be attached to a Basic-Class. However when FID began to apply DC to micro-documents in 1895, a good number of them were local descriptions. In other words, they presented Time and Space Facets. This led the UDC to use the facet device in respect of Time and Space Isolates.

32 UDC

Apart from this, a few books presenting two facets in addition to the basic facet began to appear eventually. For example, apart from books on plant physiology and on flowering plants respectively, books began to appear on physiology of flowering plants. In DC such a book can be placed only either in "flowering plants" or in "plant physiology". Suppose it is placed in the class "flowering plants". Then its relation with the books in the class "plant physiology" demand attention. But it is beyond the capacity of the notational system of DC to meet this demand. Therefore the help of the catalogue had to be invoked to bring out this relation. The catalogue had to use a Cross Reference Entry for this purpose.

321 Colon Device

However, the UDC designed a Class Number which represented both the facets of the subjects. This number was got by UDC by the Colon Device. It is illustrated by the following table:-

Subject	DC	UDC
Plant physiology	581.1	581.1
Flowering plant	582.13	582.13
Physiology of flowering plants	either 581.1 or 582.13	582.13:581.1

33 CC

By 1925, books on multifaceted classes became quite numerous. Representing only one of the facets as in DC called for many Cross Reference Entries as shown in section 352. CC had therefore to improve on UDC. It based itself on facet analysis in the idea plane and facet synthesis in the notational plane [R1]. This method of building class numbers is illustrated by the following table:-

Subject	CC	Implied Facet Structure
Plant physiology	I:3	Botany : [Problem]
Flowering plants	I5	Botany [Natural group of plants]
Physiology of flowering plants	I5:3	Botany [Natural group of plants] : [Problem]

34 Class Index Entry

Both in UDC and CC, the Class Number given would put the third subject along with the second. But the third subject will be separated considerably from the first subject. Therefore the task of relating the third subject to the first has to be left to the care of the catalogue. The catalogue uses the Class Index Entry [R6] for the purpose shown below:-

Class Index Heading	CC	UDC
Physiology, Flowering plant	I5:3	582.13:581.1
Physiology, Plant	I:3	581.1

35 Law of Parsimony

It may now be shown what saving there is in cataloguing entries if CC or UDC is used, instead of DC, to bring out the relation in question.

351 Number of Class Index Entries with CC or UDC

If CC or UDC is used, the above two Class Index Entries are sufficient to meet the demand of the relation in question.

352 Number of Cross Reference Entries with DC

But if the DC is used, there should be as many Cross Reference Entries "From Physiology" as There are books on "Physiology of Flowering Plants". For, we cannot manage with the single entry:-

Physiology, Plants
See also
Flowering plants

For, every book on "Flowering Plant" will not deal with "Physiology". Therefore, for each of the books on "Flowering Plants" dealing with physiology, there must be a separate Cross Reference Entry under the heading "Physiology, Plants". In other words, Subject Analytical Entries have to be given. Thus the law of Parsimony is better satisfied in respect of the catalogue entries needed to bring out their relation, if CC or UDC is used instead of DC.

4 PHASE RELATION

After World War II, books involving varieties of Phase Relation [R3] between simple or compound classes began to increase. UDC met the situation by the very colon device which it used to meet the demands of facet relation. However, CC designed its phase device which was different from its facet device. In both the cases, the aid of the Class Index Entry in the catalogue has to be sought in the same way as described in section 34.

5 PEDESTRIAN DOCUMENTS AND ITS REVIEWS AND REPLIES

By Pedestrian Work is meant a work not eligible to be made a Quasi Class [R1]. Most of the books published today are pedestrian books. However, even a pedestrian book accumulates reviews, appreciations, and criticism about itself. Further occasionally a pedestrian book provokes a chain of replies and counter replies. For example Chesterton and Belloc used to exchange such replies in the form of books. This phenomenon is very common in the universe of micro documents. The correspondence column of the Library Association record often presents such chains of pedestrian micro-documents. The Laws of Library Science will be better satisfied if this class of related documents are brought together on the shelf if they are books or in the classified part of the documentation list if they are micro-documents. This problem became acute in documentation work handling micro-documents. By 1950, when CC began to rig itself up for documentation work, it was necessary for it to work out a device to bring together a pedestrian document with the documents reviewing, criticising, appreciating, or opposing it. By definition, a pedestrian book cannot be converted into a class — that is, it cannot be given a unique class number. Therefore CC had to make the Book Number bring such an effect. To make the Book Number do this work, it invented the device of the Criticism Facet in Book Number. By this device, the Book Number of a review, criticism, appreciation or reply of a pedestrian book consists of the Book Number of the latter with the additional facet ":g"[R1].

Example A

236(SZ) p7N60 Ranganathan (S R) and Girija Kumar, Eds. Social science research and libraries; 1960.
236(SZ) p7N60:g Lewis (P R). Review of the above . (Lib Ass rec; 63; 1961; 31).

Example B

V2.N5 N44 Nichols (B). Verdict on India; 1944.
V2.N5 N44:g Jog (N G). Judge or Judas ? 1945.
V2.N5 N44:g1 Murray (G). Verdict on Beverly Nicholos; 1945.
V2.N5 N44:g2 Prem (D R). Portrait of a gutter inspector; 1945.

This device makes classification itself meet the demand of this kind of relation, without the need to invoke the aid of the catalogue.

6 COLLATERAL RELATION

Sometimes a document in a class contains information on a Collateral Class -- that is, a class belonging to some other array or some other chain. For example, the "Report of the Tariff Board (India) on Protection of Paper" contains a fairly good account of the Technology of Paper-Making. The former is a class in the Main class "Economics". The latter is a class in the Main class "Useful Arts". A reader interested in the documents in the latter class should have his attention invited to the Report of the Tarrif Board. These two classes cannot be found together either to the same Array or Chain. Therefore, classification cannot disclose the relation between these two documents. The only course left open is to invoke the aid of the catalogue. The catalogue will do it through its Cross Reference Entry. This has to be done to each document. A general reference from one class to another will be misleading. Because every document on Tariff on Paper will not contain anything on the Technology of Paper Making.

7 SERIES AND PSEUDO-SERIES

71 Publisher's Series

The volumes included in a Publisher's Series cannot be said to have relation with one another based on their thought-content. Their relation usually pertains to the different volumes having certain common intangible quality such as standard, flair, and orientation. But it is well known that none of these intangible qualities are amenable to classification. Therefore classification cannot bring out the relation between such documents. This has to be left to the care of catalogue. Most catalogue codes are of help in this matter. They give the help through the Series Note in the Main Entry [R7].

72 Pseudo-Series

Three kinds of Pseudo Series have been defined [R5]. In all these cases the set of books have a common author, but do not constitute a multivolume book. Both the CCC and ALA have rules to bring the volumes of a pseudo-series to notice through Series Note in the Main Entry and the Series Index Entry.

8 ASSOCIATED BOOKS

81 Kinds of Association

Two books are said to be associated when they are related but their relation is not due to:-

1 Their subjects belonging to the same Array of Classes;
2 Their subjects belonging to the same Chain of Classes;
3 Their having facet relation;
4 Their having phase relation;
5 Their belonging to collateral classes; and
6 Their belonging to the same series or pseudo series.

Several types of Association among documents can be recognised. Here are some kinds:-

1 Document B may be an extract from Document A. This may be called Association through Extraction.

Example:-

Ranganathan (S R). Library science and scientific method is an extract from his "Five laws of library science; ed 2; 1957".

2 Document B may be the same as Document A but with a different title. This may be called Association through Change of Name.

Example:-

Brayne (Frank Lugard). Remaking of village India was published previously as "Village uplift in India".

3 Document A may be the result of the merging of the documents B and C. This may be called Association through Merging.

Example:-

Kalaeck (M). Theory of economic dynamic, an essay on cyclical and long range changes in capitalistic economy.

is the result of the merging of the following two books of the same author:

Essays in the theory of economic fluctuation; and
Studies in the economic dynamics

31 The merger book may have the same title as one of the merged books.

32 Periodicals often have this kind of relation [R9].

4 Document A may get split into documents B and C. This may be called Association through Splitting.

Example:-

Ranganathan (S R). Reference Service and Bibliography; 1940
has been split into the two books
Reference Service; 1961; and
Enumerative bibliography; 1962.

41 The title of the original book may be carried by one of the split parts.

42 Periodicals often have this kind of relation [R10].

5 Document A may be a text book for the use of the student and document B may be a teacher's Hand Book to help in teaching the text book A. This may be called Association through Hand Book for Teaching.

Example:-

Anderson and Marsdon. Short history of the British empire.
has associated with it
Teacher's hand book to Anderson and Marsdon's short history of the British empire.

6 The above are only illustrations. There can be Associations in many other ways—say

1 Abridgement
2 Adaptation
3 Commentary
4 Concordance
5 Continuation
6 Dramatization
7 Imitation
8 Libberto
9 Music setting
10 Novelisation
11 Paraphrase
12 Parody
13 Revision
14 Selection
15 Sequeal

16 Supplement
17 Translation
18 Versification
19 Version with substantial difference in qualities of thought and or expressions.

82 Means of Bringing out the Relation

Documents with some kinds of Association may be forcedly brought into relation by classification. But it has been experienced that such forced class numbers are very involved. Nor is there much advantage in bringing such documents themselves together on the shelf or their Main Entries together in the catalogue. In other cases of Association, classification may not at all be able to bring the documents together. In all cases of Associated documents, it is sufficient to bring out their relation through appropriate notes in their Main Entries and Book Index Entries. It will be useful if agreed standard terms can be arrived at as the connecting terms in such notes [R8].

83 Association through Collaboration

If document A is a translation of document B or is the result of the work of a collaborator other than a translator but has a similar relation as a translation, the title portion of the Main Entry itself may be able to lay bare their relation. In such a case, recourse need not be had to Association Note in the Main Entries or in the Book Index Entries. Which kinds of association will lend themselves to this treatment needs investigation.

9 BIBLIOGRAPHY

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2 Column 2 gives the number of the section in the text containing the reference.

C1	Sec 01	Custer (B A). Mr Phillips. (Lib Ass Rec;62;1960;407)
C2	Sec 04	ibid.
D1	Sec 01	Dewey (M). Decimal classification with relative index; ed 16; 1958; 29.
D2	Sec 1	ibid; 32.
R1	Sec 5	Ranganathan (S R). Colon classification; ed 6; 1960; part 1; sec 038.
R2	Sec 21	ibid; sec 72.
R3	Sec 4	ibid; parts 1 and 2; chap 6.
R4	Sec 5	Ranganathan (S R). Classified Catalogue Code; ed 4; 1958; sec 1192.
R5	Sec 72	ibid; sec 1352-54.
R6	Sec 34	ibid; parts 3.
R7	Sec 71	ibid; sec 1352-54.
R8	Sec 82	ibid; parts 3.
R9	Sec 81	ibid; sec 5141-51423.
R10	Sec 81	ibid; sec 5143-5146.
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CALCUTTA UNIVERSITY

Paper E

CLASSIFICATION OF CATALOGUING

S R RANGANATHAN

A tentative schedule for the special isolates needed for the depth classification of library Cataloguing is given. The device of telescoping facets in the schedule is freely used. The need for treating laws and canons as anteriorising common isolate instead of posteriorising common personality isolates is stated.

1 INTRODUCTION

11 Zone Analysis

Zone analysis of an array has been shown to be intrinsic to the idea plane and not forced on it by the notational plane [P2]. But the notational plane is obliged, if it is going to be of greatest help, not only to implement the results of zone analysis but also to indicate automatically the zone to which an isolate belongs by the character of the first digit in the isolate number. This is best done by using a mixed base of digits for the notation [P3].

12 Idea Plane

In the idea plane following four zones arise in many of the arrays:-

1 Common isolates by enumeration
2 Special isolates by enumeration
3 Special isolates by AD or CD; and
4 Special isolates by SD.

13 Notational Plane

CC is able to implement in the notational plane the above findings of the idea plane by its having four species of significant digits. The four species are:-

1 Roman Small
2 Indo-Arabic Numeral
3 Roman Capital; and
4 Brackets.

Thus, four zones in the array get formed and become even visual in the notational plane.

14 First Claim of the Zones in Notational Plane

In CC, the first claim over the notational plane belongs to the four zones of the idea plane mentioned in sec 12 but it may happen that a particular array in the idea plane does not have any probability for any of its isolate to be formed by the AD, CD or SD. In such a case the corresponding zone in the notational plane can be released to represent isolates in the array got by enumeration.

15 First use of Telescoped Facet

The first use of telescoped facet was made in including an array isolates by enumeration of Specials of a basic class, and Systems for basic class got by CD. This was done in the (BC) Physics, Agriculture, Medicine, Psychology and Education. These were brought into use unconsciously [C2] and some of these consciously even in ed 1. It is now known that systems, specials and the ordinary isolates of the above subjects can be looked upon as successive levels of (P). Viewed from the idea plane, therefore, these sets of isolates belong to different successive facets. But viewed from the idea plane their schedules can always be put as if to belong to a single array. This is Telescoping of Facets. We are now beginning to indicate in the schedule where a change of facet occurs within a facet by the addition of terms such as "Telescoping Point 1" "Telescoping Point 2" etc. This has been illustrated in the paper Classification of library classification [C1]. The advantage of telescoped schedule is that any level of facet can appear by itself in the class number without the necessity to indicate that the earlier levels are absent or vacant in the subject that has to be classified. This is illustrated in sec 5.

16 Multiplication of Telescoping Point

It is found that the classification of cataloguing admits of the telescoping of as many as six levels of personality facet to be attached to the host class "2:55 Cataloguing". This is seen in the schedules of isolates given in sec 2. The use of five telescoping points automatically brings together in the schedule six consecutive levels.

17 New Device for Multiplication

Till now we had been under the impression that telescoping points can only arise where there is change from one species of digits to another in an isolate number or where there is a change of octave. Till now we had also been under the impression that the last digit in the species alone can be used as an octavising digit. But now we realise that there is more freedom. It is possible to use the octavising digit each of the digits towards the end of the species. For example, telescoping point 3 occurs in the schedule in sec 3 after "9W Word entry". It is believed that all kinds of orders have been exhaustively enumerated between "9B and 9W". After reserving X for denoting any unforeseen isolate or as the octavising digit for any number of isolates based on the characteristic "Kinds of entries". We still have 9Y and 9Z as other octavising digits. We, therefore, use 9Y as the starting point for the level of facet made up of isolates based on the characteristic "Kinds of Documents". We also use 9Z as the starting point for the level of facet made up of isolates based on the characteristic "Bibliographical coverage". Since the term 'Telescoping Point' marks off the facet based on the kinds of entries, the term "Telescoping Point 2" marks off the facet based on the 'Kinds of documents' and the term 'Telescoping Point 3' marks off the levels of facet based on the characteristic "Bibliographic coverage".

171 Multiplication and Chronological Device

The diverse systems of a basic class, the diverse schemes of classifications, and the diverse codes of cataloguing all individualise by the chronological device. In the forthcoming Ed 7 of CC the digit U is used as the octavising digit for further centuries beyond 2300-2399. Thus the five digits V W X Y Z are released for accomodating five further levels of facets after the level of facet got by CD in a telescoped schedule. This is a great freedom. Till now we were under the impression that a further level of facet after the CD should necessarily be assigned to zone 4 of the array. This calls for packeted notation. This made the isolate number have a minimum of three digits. But with the release of V to Z for accomodating successive levels of facets, the minimum number of digits has been reduced to two. This means the saving of 1 digit. For a classificationist, saving one digit is of as much value as the saving of the phoneme for a grammarian. A grammarian of ancient India has said that the saving of a phemon gives him as much delight as the birth of the first son.

18 Sequence of Telescoped Sectors

The main problem in the arrangement of telescoped sectors is that of their sequence. This means the sequence of levels. If an isolate belonging to each of the sectors appears as a facet in the subject the one from the last sector should be the first level facet of the subject. The one from the second sector from the last should be the second level facet of the subject and so on. This is the implication of a telescoped schedule. Thus the sequence of the the factors is determined by the sequence of the levels of the facets. This is determined with the aid of the wall-picture-principle [P1].

2 SCHEDULE IN [P]

a1-a134	as for 2:51
a14	Canons
a141	Ascertainability
a142	Prepotence
a143	Individualisation
a144	Sought heading
a145	Context
a146	Reticence
a147	Currency
a148	Consistance
a1491	Purity

3 SCHEDULE IN [M]

a1	Accuracy
a11	Tolerance
aA1	Uniqueness
aA6	Non-uniqueness
aF1	Closedness
aF2	Openness
r5	Aesthetic
r56	Unaesthetic
s44	Rationalness
s446	Irrationalness
s735	Efficiency
s7356	Inefficiency
s76	Versatility

4 SCHEDULE IN [E]

1	Choice
2	Rendering
3	Writing
4	Punctuation
7	Sequence
92	Lay-out

5 LIBRARY CATALOGUING

A tentative schedule for Library Cataloguing is given below according to CC.

2:55 LIBRARY CATALOGUING

Special Isolates

1	Heading
11	Entry element
12	Secondary element
13	Individualising element
14	Descriptive element
15	Multiple heading
152	Double
153	Treble
161	Referred from heading
162	Referred to heading
2	Title
21	Short
211	Half-title
212	Running title
213	Binder's title
22	Secondary
221	Alternative
24	Puff
25	Fanciful
28	Uniformised
3	Author
31	Personal
32	Corporate
321	Government
322	Institution
323	Conference
33	Joint
332	Two
333	Three or more
34	Conflict of authorship

4	Name
41	Personal (Divided by languages of the cultural group by SD)
42	Geographical
43	Corporate body
431	Government
432	Institution
433	Conference
44	Series
45	Subject

91	Sections of an entry
911	First
912	Second etc.

Telescoping Point 1
By kinds of entries

9B	Main
9C	Added(?)
9D	Book entry
9E	Author
9E2	Joint
9E3	Multiple
9F	Pseudonym
9G	Collaborator
9G1	Editor
9G2	Compiler
9G3	Translator
9G4	Commentator
9G5	Illustrator
9G91	. . .
9H	Title
9J	Series
9J2	Double
9J3	Pseudo
9J41	First kind
9J42	Second kind
9K	Associated book
9M	Author analytical
9N	Subject analytical
9N5	Cross reference
9Q	General entry
9R	See also subject entry
9S	Class index entry
9T	Cross reference index entry
9T1	Alternative name
9T2	Variant form of name
9T3	Pseudonym-real-name
9T4	Editor of series
9T6	Generic name
9W	(Quasi isolates)
9W1	Number entry
9W11	Call number entry
9W12	Class number entry
9W5	Word entry

Telescoping Point 2

9Y	(By kinds of document)
9Y1	Conventional book (may be taken as favoured)
9Y2	Multi-volumed
9Y3	Composite
9Y31	Ordinary
9Y34	Artificial
9Y4	Periodical publication
9Y8	Archives
9YA	Non-conventional documents
9YB	Manuscripts
9YC	Pictures
9YE	Microfilm
9YR	Music

Telescoping Point 3
(By bibliographical coverage)

9Z1	International bibliography
9Z2	National
9Z3	Regional
9Z4	Linguistic
9Z5	Local
9Z7	Library catalogue (may be taken as favoured)
9Z75	Union catalogue
9Z86	Emphemera
9ZB	Publisher's catalogue
9ZC	Bookseller's catalogue
9ZD	Second-hand bookseller's catalogue

Telescoping Point 4

A	Code
A1	Author catalogue
A3	Dictionary catalogue
A5	Classified catalogue
A91	(Other types to be enumerated).
B	Specific codes (Individual codes by CD)

Illustrative

M	Baber
M4	British Museum Library

M7	Cutter
M9	Library of Congress
M99	Prussian instructions
N	ALA
N2	Vatican
N3	CCC

Telescoping Point 5
(By regional coverage of code - by Bracket Notation)

V1	International
V2	National
V3	Regional
V7	Local
VP	Lingustic

6 EXAMPLES

2:5513-41	Authorial homonym and synonym. (An lib sc 1, 1954, 174-84).
2:55144-1:2	Asian names. (Abgila 3, 1953, 45, 54-54).
2:559E1-43:2	Corporate headings. (Libri 6, 1955, 1-21). "Discusses the rendering of corporate names in heading of author entry.
2:559F, 1:2	Rendering a pseudonymous heading.
2:559W5; 7:7	Card catalog arrangement. (Lib resources and tech services 3, 1960). "Discusses the alphabetical arrangements of catalogue cards."
2:559Y4, 9B, 1	Main entry for periodical publications.
2:559Z75, 9Y4	Union catalogue of periodical publications. (Ann Ind Lib Ass 1, 1950, 177-88).
2:559Z75, 9Y4, 9B, 91	Leading section of main entry in a union catalogue of periodical publications.
2:559Z86, 9Q, 1:1	Cataloguing ephemera (Lib resources and tech services; 4; 1960, 128-131). "Deals with the choice of subject headings for Farmington collection".
2:55A3, 9Q, 1-45:15	Chain procedure for dictionary catalogue. (An lib sc 1, 1954, 2, 16-21).
2:55A5, 9Q, 1-45:15	Chain indexing and the classified catalogue. (Lib Ass rec 57, 1955, 141-148).
2:55N, 9E, 1-41123:2	Spanish language cataloguing and the Lubetsky report. (Lib resources and tech services 2, 1958, 44-46). "Discusses the rendering of Spanish names in the headings of author entry according to ALA".
2:55N3, 9J4	Genesis of the concept of pseudo-series. (Abgila 1, 1950, 168-172).
2:55N3, 9K	Catalogue of associated books (Abgila 1, 1949, 64-69).
2:55N3, IQ, 1-45:15	Apropos the last link index entry of the CCC. (Ind lib 2, 1947, 49-55)
2:55N3; 9Y3	Cataloguing a composite book. (An lib sc 2, 1955, 50-53).

7. INDEX

Contractions used in the index

[CE1] = Common Energy Isolate
[CM1] = Common Matter Isolate
[CP1] = Common Personality Isolate
[2P] = Second Round Personality Isolate

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  index entry [2P] 9S
  number entry [2P] 9W12
Classified catalogue code [2P] A5
Closedness [CM1] aFI
Collaborator
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  entry [2P] 9E2

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  of Congress [2P] M9
Linguistic
  bibliography [2P] 9Z4
  catalogue code [2P] VP
Local
  bibliography [2P] 9Z5
  catalogue code [2P] V7

Main entry [2P] 9B
Manuscripts [2P] 9YB
Microfilm [2P] 9YE
Multi-volumed book [2P] 9Y2

Multiple
  author entry [2P] 9E3
  heading [2P] 15
Music [2P] 9YR

Name [2P] 4
National
  bibliography [2P] 9Z2
  catalogue code [2P]V2
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  documents [2P] 9YA
Non-uniqueness [CM1] aA6
Number [2P] 9W1

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8 BIBLIOGRAPHY

Note 1 The first column gives the serial number of reference.

2 The second column gives the number of section in which the reference occurs.

3 The author of all the references is Dr S R Ranganathan.

C1 sec 15 Classification of library classification. Ann lib sc; 7; 1960; 65-76.

C2 sec 15 Colon classification. Ed 5; 1957; Pt 1; sec 64.

P1 sec 18 Postulational approach to depth classification. Ann lib sc; 7; 1960; 80.

P2 sec 11 Prolegomena to library classification. Ed 2; 1957; sec 3622.

P3 sec 11 Ibid; sec 362.

Paper F

SLANT IN ABSTRACTS

A CASE STUDY

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Examines abstracts of articles on Biochemistry appearing in Chemical abstracts as well as Biological abstracts from the point of view of slant in abstracting. Shows that about 33% of 128 abstracts examined in the two abstracting periodicals, have biological or chemical slants in the abstracts. Shows the time lag between the publishing date of an article and the appearance of its abstract. Suggests the ways by which this lag can be bridged. Brings out the role to be played by International abstracts, National documentation centres and Service libraries in providing slant to abstracts. Emphasises the training needs of such service librarians.

0 INTRODUCTION

In the monthly meeting of the librarians of the City of Madras held in October 1960, the possibility of and the necessity for a local abstract of an article being given a slant, according to the interests of the consumers in a Service Library, was raised. As a preliminary to this study, it was suggested that it would be an advantage to compare the abstracts of the same set of articles appearing in the abstracting periodicals prepared by and for different interests. It was felt that there would be much of overlapping among the articles abstracted in the Biological Abstracts and the Chemical Abstracts respectively. So a comparative study was made of the abstracts in Biochemistry occuring in both of the above abstracting periodicals.

1 SAMPLE STUDIED

The abstracts in Biochemistry appearing in the issue of April 1958 of V 32 of the Biological Abstracts were taken as the basis. They are 128 in number. They carry the serial numbers 11426 to 11553 both inclusive. For each of these serial numbers the corresponding abstract in the Chemical Abstracts was located with the aid of the author index.

2 DESCRIPTION OF THE TABLE

These results are tabulated below. This is in three blocks.

21 The first block gives the year of the publication of the original article.

22 Column 1 of the 2nd block gives the serial number of the abstract of the article in the Biological Abstracts. Column 2 has the symbol "NA" if the document is merely indexed without an abstract. These two columns form the second block.

23 The third block relates to the Chemical Abstracts. The first column gives the serial number of the abstract in the Chemical Abstracts. Column 2 has the symbol "NA" if the document is merely indexed without an abstract. It gives the symbol "SA" if the abstracts are substantially the same in both the abstracting periodicals. Column 3 gives the month and the year of the appearance of the abstract in the Chemical Abstracts. Column 4 gives the number of the volume of the Chemical Abstracts giving the abstract. If an abstract in the Biological Abstracts does not have a corresponding one in the Chemical Abstracts, the columns in the third block are all left vacant.

24 The Table

Note = NA = No Abstract
SA = Substantially Same Abstract

Year of Publication of the article	Biological Abstracts: April 1958 Serial Number of the abstract	Biological Abstracts: Remarks	Chemical Abstracts: Serial Number of the abstract	Chemical Abstracts: Remarks	Chemical Abstracts: Month and year	Chemical Abstracts: Vol. Number
1	2	3	1	2	3	4
1957	11426	NA	16619 i		Nov 57	51
1957	11427	NA	2141 f		Feb 58	52
1957	11428		1339 d		Jan 58	52
1957	11429		20515 i		Nov 58	52
1957	11430		16586 f	SA	Nov 57	51
1957	11431		2982 b	SA	Feb 58	52
1956	11432		2186 d		Feb 57	51
1957	11433					
1957	11434	NA	16652 g		Nov 57	51
1957	11435	NA	475 e		Jan 58	52
1956	11436	NA	1305 g		Jan 58	52
1956	11437	NA	1305 h		Jan 58	52
1957	11438					
1957	11439		9009 g	SA	June 57	51
1957	11440	NA	16498 a	NA	Nov 57	51
1957	11441		5608 g	SA	Apr 58	52
1953	11442	NA	10299 b		July 56	50
1957	11443		4726 i		Mar 58	52
1957	11444		16615 d	SA	Nov 57	51
1957	11445	NA	2614 f		Feb 58	52
1955	11446					

Table continued

1	2	3	1	2	3	4
1957	11447		17318 f		Nov 57	51
1957	11448		14072 d	SA	Sep 57	51
1956	11449	NA	2113 g		Feb 58	52
1956	11450	NA	2113 h		Feb 58	52
1956	11451	NA	2113 i		Feb 58	52
1957	11452	NA	16305 h	NA	Nov 57	51
1957	11453	NA	16618 a		Nov 57	51
1957	11454		8185 e		June 57	51
1956	11455	NA	1305 i		Jan 58	52
1956	11456	NA	1306 i		Jan 58	52
1957	11457		15676 e		Oct 57	51
1957	11458		16616 a		Nov 57	51
1957	11459		16616 f	SA	Nov 57	51
1957	11460	NA	16508 c	NA	Nov 57	51
1957	11461	NA	16619 a		Nov 57	51
1956	11462		2186 b		Feb 57	51
1957	11463		472 h	SA	Jan 58	52
1957	11464	NA				
1957	11465		17471 a	SA	Nov 57	51
1957	11466					
1957	11467		18060 a	SA	Nov 57	51
1957	11468					
1957	11469		4738 b		Mar 58	52
1957	11470		3102 i		Feb 58	52
1957	11471		6589 d		Apr 58	52
1957	11472		1418 f	NA	Jan 58	52
1957	11473		4737 g		Mar 58	52
1957	11474					
1957	11475		1418 g	NA	Jan 58	52
1957	11476		18254 a		Nov 57	51
1957	11477		4738 c		Mar 58	52
1957	11478		1418 e	NA	Jan 58	52
1957	11479					

Table continued

1	2	3	1	2	3	4
1957	11480		18264 i		Nov 57	51
1957	11481		586 f		Jan 58	52
1955	11482		16907 f		Nov 56	50
1957	11483		16433 h	SA	Oct 58	52
1957	11484		16617 g	SA	Nov 57	51
1957	11485		557 g		Jan 58	52
1957	11486		2223 b	SA	Feb 58	52
1957	11487	NA	16618 g		Nov 57	51
1955	11488		16907 c		Nov 56	50
1957	11489		475 a	SA	Jan 58	52
1956	11490		5879 b	SA	Apr 57	51
1957	11491		8849 e		June 57	51
1957	11492		3097 f		Feb 58	52
1957	11493					
1957	11494		16977 c		Nov 57	51
1957	11495	NA	16636 i	NA	Nov 57	51
1957	11496		492 c		Jan 58	52
1956	11497		16477 h		Nov 56	50
1957	11498		577 d	SA	Jan 58	52
1957	11499	NA	16637 a	NA	Nov 57	51
1957	11500		3130 c		Feb 58	52
1957	11501		4769 c		Mar 58	52
1957	11502		1319 c		Jan 58	52
1957	11503	NA				
1957	11504		15620 a		Sep 58	52
1957	11505		2983 c	SA	Feb 58	52
1956	11506		531 b		Jan 58	52
1957	11507		3097 g	SA	Feb 58	52
1957	11508		16600 e		Nov 57	51
1956	11509		5870 d		Apr 57	51
1957	11510	NA	16618 h		Nov 57	51
1957	11511	NA	2953 g		Feb 58	52
1957	11512		16600 f		Nov 57	51

Table Continued

1	2	3	1	2	3	4
1957	11513		16600 g		Nov 57	51
1957	11514	NA	16616 h		Nov 57	51
1957	11515		7385 a		May 58	52
1957	11516	NA	1319 d		Jan 58	52
1957	11517	NA	1319 i		Jan 58	52
1957	11518		473 d	SA	Jan 58	52
1957	11519		473 f	SA	Jan 58	52
1957	11520		18188 e	SA	Nov 57	51
1957	11521		4737 i		Mar 58	52
1955	11522					
1957	11523		2984 d		Feb 58	52
1957	11524		2984 d	SA	Feb 58	52
1957	11525		16580 i		Nov 57	51
1957	11526		18188 d		Nov 57	51
1956	11527					
1955	11528					
1957	11529	NA	16637 a	NA	Nov 57	51
1956	11530					
1957	11531	NA	16617 h		Nov 57	51
1957	11532		3950 e		Mar 58	52
1957	11533	NA	475 i		Jan 58	52
1957	11534		12028 f		July 58	52
1957	11535		15669 a	SA	Oct 57	51
1957	11536		4769 d		Mar 58	52
1957	11537		17336 e	SA	Oct 58	52
1957	11538		16433 g	NA	Oct 58	52
1957	11539		16344 f	NA	Oct 58	52
1955	11540					
1957	11541		480 c	SA	Jan 58	52
1957	11542	NA	475 d		Jan 58	52
1957	11543	NA	3971 i		Mar 58	52
1957	11544		2981 c	SA	Feb 58	52
1957	11545		16615 g		Nov 57	51
1957	11546		3034 i		Feb 58	52

Table Continued

1	2	3	1	2	3	4
1957	11547		3064 b	SA	Feb 58	52
1956	11548	NA				
1957	11549		2979 b		Feb 58	52
1957	11550		13166 f	SA	Sep 57	51
1957	11551		3075 b	SA	Feb 58	52
1953	11552		7019 h	SA	May 55	49
1957	11553		16617 d	SA	Nov 57	51

25 Filtering from the Sample

The following are the obvious findings from the above table:-

	DETAIL		NUMBER
1	Entries considered in the Biological Abstracts		128
	Entries not traceable in the Chemical Abstracts		16
		Balance	112
2	Mere index entries without abstracts in the Biological Abstracts		34
		Balance	78
3	Entries with abstracts in Biological Abstracts but only with index entries in the Chemical Abstracts		5
		Balance	73
4	Entries with substantially the same abstracts in both the Biological Abstracts and the Chemical Abstracts		31
	Ultimate number of cases of abstracts with different slants		42

250 Substantially Same Abstracts

The term "Substantially the same abstracts" denotes that the abstracts in the two abstracting periodicals differ only in the verbal plane and not in the idea plane. Quite often the sentences stand in different permutations or there is a difference only in the auxiliary words used.

251 Example of Permutation

BAHADUR (K) and SINHA (R C). Influence of the concentration of papain activated by hydrogen sulphide on the hydrolysis of casein at different temperatures and pH value 4.4. (Enzymologia 18(5), 1957, 288-292).

Biological abstracts 11483 in April 1958	Chemical abstracts 16433 in October 1958
The proteolytic activity of papain on casein at pH 4.4 has special properties. The degree of acid production in the first hour is proportional to the enzyme concentration, at temperature of 50-65 inclusive. The disproportional velocity during subsequent hours is due to formation of protein deactivator formed during the hydrolysis (N Milman).	During the 1st hr. of the reaction, the proteolytic action of papain on casein is proportional to its concn. at pH 4.4 and at 50, 55, 60 and 65. During the 2nd and 3rd hrs the formation of a protein deactivator during the hydrolysis of casein causes a different behavior of enzyme activity in relation to concn. (Erich Hischberg).

252 Example of Omission of Auxiliaries

GHOSH (S N), ROY (M K), CHAUDHURI (S N). Studies on the nature of renal damage by nephrotoxic serum. 3. Studies on phosphomonoesterases of neophropathic kidney in guinea-pigs. (Ann biochem and exp med 17(3), 1957, 79-84).

Biological abstracts 11507 in April 1958	Chemical abstracts 3097 g in February 1958
Phosphomonoesterases of guinea pig kidney were assayed and some of their properties described. It was found that nephrotoxic serum has no infleunce on the dephosphorylating rates of phosphomonoesterases at pH 9.4, 6 and 4. (Auth Summ).	Phosphomonoesterases of guinea pig kidney were assayed and some of their properties described. Nephrotoxic serum has no effect on the dephosphorylating rates of phosphomonoesterases at pH 9.4, 6 and 4. (C W Ackerson).

253 Example of Change of Auxiliaries

WOLFSON (S K) Jr and WILLIAMS-ASHMAN (H G). Isocitric and 6-phosphogluconic dehydrogenases in human blood serum. (Proc Soc exp Biol and Med 96(1), 1957, 231-234).

Biological abstracts 11551 in April 1958	Chemical abstracts 3075 b in February 1958
Methods for determination of isocitric and 6-phosphogluconic dehydrogenases in human blood serum are described. The properties of these enzymes, and factors affecting their activity in the blood sera of normal human adults are discussed. (Auth Summ).	Methods of detn of the above enzyme in serum are described, and some values obtained are reported. The properties of these enzymes and factors affecting their activity in blood serum of normal human adults are discussed. (L E Gilson).

26 Surviving Cases

Thus the entries available for a comparative study of abstracts with different slants are only 42 out of the sample of 128. This gives 33%. This may be taken as a measure of the introduction of biological or chemical slants in the abstracts of biochemical documents.

3 SLANT IN ABSTRACTS

31 Articles on an Organic Substance

Let us consider the following two abstracts of the same article.

SAKURAI (Setauji). Enzymatic preparation of optically active essential amino acids. 2. The preparation of L. Tryptophan. (J biochem (Tokyo) 44(1), 1957, 47-50).

In the Biological Abstracts of April 1958, 11454, this article was abstracted as follows:-

The synthesis of indolepyruvic acid as a material for tryptophan preparation is improved by use of p-toluene sulfonic acid. A procedure for synthesis of L-tryptophan is given which yields a product which can be analysed as follows: C 64.54, H 5.67, N 13.51%, $[a]_D^{25}$=-30.9 with 20 cm path of 210 mg/24 ml aqueous soln. (F K Anan).

In the Chemical Abstracts of June 1957, 8185, this article is abstracted as follows:-

On starting from methyl indoleacetate (I), indolepyruvic acid (II) is synthesized, and II is converted into L-tryptophan (III) enzymically. Mix 50.5g diethyl oxalate with an alc soln of a Na ethoxide (7.9g Na in 95g abs EtOH), let stand 10 min, and add 60 g I. After standing overnight, evap off EtOH in vacuo, dissolve the residue in 350 ml H_2O, ext I twice with 100 ml ether each, acidify the aq layer by adding 16g AcOH Ext the sepg only methyl a-ethoxalylindoleacetate (IV) 3 times with 60 ml ether, and anhyd Na_2SO_4, distill off ether (yield of IV, 72g). Heat 20g crude IV with 140g AcOH, 1.4g p-toluenesulfonic acid for 6 hrs in a flask fixed with a fractionating column for removal of AcOMe and AcOEt. Ext II with dil. Na_2CO_3 soln add 3N HCl to adjust to pH 2, filter, wash the ppt of II and dry (yield of I of II, 6.5g, mp 198-200°). For prepn of III, mix 5.0g crude II, 4.0g L-aspartic acid, and 1.2g monosodium glutamate monohydrate contained in 200 ml water, drop in 20% NH_4OH until it becomes clear, add 20 ml 0.2 M phosphate buffer (pH 7.6) and 225 ml enzyme soln. (transaminase) (cf. preceding paper, loc cit), dil to 550 ml, incubate, 38°, 78 hrs. Heat the reaction mixt, 80°, 10 min, filter conc in vacuo to 300 ml adjust pH 5.0 with dil HCl filter, pass the filtrate through a permutit DR column (2 X 30 cm), elute with 600 ml 2%. NH_4OH conc the effluent in vacuo to dryness, wash the residue with a small vol of MeOH, and dry (yield of III 2.3g, m.p. 260-5). Recrystallize from 60 ml water (yield 1.2 g, m.p. 280-3°). The properties: C 64, 54, H. 5.67, N 13.51%, (L) $^{25}_{D}$ = - 30.9 as a soln of 210mg III in 14 ml water, tube length = 20 cm. (F K Anan).

Here we find that the abstract in the Biological Abstracts is made shorter than in the Chemical Abstracts by the inclusion in the latter and the exclusion in the former the details in chemical manipulation. It is a moot point whether this is a case of slant. It will be so, only if the Biologist is interested in the result and not in the details of manipulations, when the substance studied is essentially organic and biosubstance comes in only in a secondary way.

The abstracts of this article have been furnished by the same abstractor to both the periodicals. The discrimination made by him should therefore be taken as truly significant. In other words, he has made a differentiated slant for the two different periodicals. 12 abstracts bearing the serial numbers 11428, 43, 47, 11457, 11476, 11491, 11509, 13, 21, 25, 45, and 46 in the Biological Abstracts come under this category.

32 Articles on a Bio-Substance

Let us consider the following two abstracts of another article.

FREE (Alfred H) CHAUNCEY (O Rupe) and INGRID (Metzler): Studies with a new colorimetric test for protenuria: (Clin chem 3(6) 1957, 716-727).

In the Biological Abstracts of April 1958, 11469, this article is abstracted as follows:-

A color reaction of protein was formulated into two simple colorimetric tests for protein in urine; one is a tablet test, consisting of a salicylate buffer and bromophenol blue, and the other is a strip test consisting of a paper strip impregnated with a citrate buffer and tetrabromophenol blue.

The basic principle in both tests is that of "Protein error of indicators". These tests which can be performed in a few seconds are carried out by placing a drop of urine on the tablet followed by two drops of water or by dipping the strip into urine. The color change is from yellow in the absence of protein to blue in the presence of protein. The tests detect amounts of protein in urine of the order of 10mg per 100 ml.

Experiments with approximately 5000 urines, taken from both hospital patients and normal subjects, reveal that these tests are reliable, rapid, accurate, sensitive, specific and capable of being used with turbid urines. (Authors).

In the Chemical Abstracts of March 1958, 4739b, this article is abstracted as follows:-

Two simple colorimetric tests for protein in urine are presented. One is a tablet test, consisting of a salicylate buffer and bromophenol blue. The other is a strip test, consisting of a paper strip impregnated with a citrate buffer and tetrabromophenol blue. The tests are simple, rapid, accurate, sensitive, specific and capable of being used with turbid urines.

In this example the substance studied is a Biosubstance. Naturally the biologist has greater interest in the details of the biochemical manipulations of such a substance. But the chemist is apparently interested in not more than knowing the result in general. Apparently this accounts for the difference in slant in the two extracts given above, unless it is wholly unintended and fortuitous.

The abstracts bearing the following serial numbers in the Biological Abstracts come under this category. 11429, 32, 62, 70, 11477, 80, 96, 11501, 11502, 11504, 11512, 15 and 11523.

33 Articles on the Physiology of Particular Organs

Let us next consider the abstracts of still another article.

GEORGE (J C) and SCARIA (K S). On the occurrence of lipase in the skeletal muscles of vertebrates and its possible significance in sustained muscular activity. (Jour animal morphol and physiol 3(2); 1956; 91-103).

In the Biological Abstracts of April 1958, 11506, this article is abstracted as follows:-

The pectoralis major muscle of the pigeon contains a true lipase. Its pH optimum is 8. The enzyme shows only slight activity at temperatures below 15° C. The optimum temperature for long period of incubation is 40° C. It is more stable than any other known lipase between temperatures 40 and 60° C. The activity of the enzyme at different periods of incubation and at various concentrations is presented. Its activity on the different substrates has the order tributyrin > triacetin > castor oil > olive oil. The lipase value of the pectoralis major muscle of the pigeon is estimated to be 8.5. The occurance of lipase is also noted in the breast and leg muscles of the fowl and in the leg muscles of the frog. The lipase values obtained for these muscles are 1.0, 1.1 and 0.8 respectively. The significance of the occurrence of lipase in muscle is discussed. (Auth Summ).

In the Chemical Abstracts in January 1958, 531b, this article is abstracted as follows:-

A true lipase from the pectoralis major muscle of the pigeon is described. A relation between lipase content and fat utilization during sustained muscular activity is indicated. (Norman G Roth).

In this case the organ associated with the biosubstance is primarily kept in view. Indeed the physiology of the organ concerned seems to be the essence of the matter. Naturally Biologists are more interested in this case than the Chemists. Therefore the abstract of such an article is more detailed in the Biological Abstracts than in the Chemical Abstracts. This difference in details marks the slant.

The abstracts bearing the following serial numbers in the Biological Abstracts come under this category. 1145, 81, 82, 85, 88, 92, 11532, 34, 36, 11500 and 11508.

34 Articles on Chemical Manipulation

Let us consider the following abstracts of yet another but the same article:-

HERNANDO (Luis) CRABBE (Jean) ROSS (Eric J) REDDY (William J) RENOLD (Albert E) MELSON (Don H) and THORN (George W). Clinical experience with a physiochemical method for estimation of aldosterone in urine. (Metabolism Clin and expt. 6(6) 1957, 518-543).

In the Biological Abstracts of April 1958, 11471, this article is abstracted as follows:-

A physiochemical method for the estimation of aldosterone in urine is described and its usefulness and reliability are evaluated. Levels of aldosterone excretion in normal subjects and in patients suffering from variety of endocrine and other disorders were determined. The effect on the excretion of aldosterone of manipulation of the dietary intake of water, Na and K; of the administrations of adrenocorticotropic hormone, growth hormone and Pitressin of natural and synthetic steroids; and of amphenone were observed and are discussed. Chemical and biological characteristics of an unknown substance isolated from the urine of subjects on a low sodium diet are described. (Auth Summ).

In the Chemical Abstracts of April 1958, 6589d, this article is abstracted as follows:-

A physiochem method for the estn of aldosterone in urine is described in detail. The procedure based largely on that of Nehar and Wettstein, consists essentially of acid hydrolysis of the total 24 hrs urine sample extn with $CHCl_3$, chromatography on Florisil column, successive paper chromatographic fractionation and final estn by the blue tetrazolium reaction applied to the steroid eluted from the paper. In normal subjects on an unrestricted diet, the urinary output of aldosterone ranged from 0 to 15% 24 hrs, the majority of values did not exceed 9γ but 7 of 72 detns ranged from 10 to 15γ. In various endocrine disorders aldosterone excretion may be elevated e. g. in Cushing's syndrome caused by bilateral adrenal hyperplasia, and in adrenocortical carcinoma. Normal values were found in panhypopituitarism. Elevated values were seen in pregnancy; these are considered to be of adrenal origin. High aldosterone excretion was seen in a patient with diabetes mellitus not controlled by insulin and in a patient with diabetes insipidus not controlled by Pitressin. Restricted Na intake resulted in an elevated aldosterone excretion. High levels were found in nephrotic patients in the Na retaining phase; during Na diuresis levels were low normal in one subject moderately raised in another. High levels were seen in Na-losing nephritics. Aldosterone excretion averaging 90γ/24 hrs was found in a patients with an adrenal adenoma. Excretion of aldosterone by normal subjects was 10 times greater during the day than during the night. Intravenous infusion of adrenocorticotropin did not greatly increase urinary levels of aldosterone unless the subject was maintained in a situation likely to produce a rise in aldosterone per se, e g, low Na intake, or unless the adrenal glands were hyperactive. Fluorohydrocortisone but not prednisone or cortisone, reduced urinary concns of aldosterone. Beef growth hormone did not affect aldosterone excretion nor did high H_2O intake amphenone inhibited the release or secretion of aldosterone by the adrenal cortex. A 2nd substance more polar than aldosterone on the chromatogram was noted to respond more promptly than aldosterone to Na restriction. This substance appears to be identical with the compd. of Brooks, et. al. (Lancet II 925 (1956) 56 references).

In this case the inordinate length of this abstract is traceable to the detailed account of manipulation given in it. Relatively to Chemistry, Biochemistry is applied subject. As a pure science chemistry is interested in methodology. As an applied science, Biochemistry is interested in the substance studied more than the methodology. This general trend is incident in many cases not only in the field of chemistry but in the other fields also. This trend is another cause for slant in abstract.

The abstracts bearing the following serial number in the Biological Abstract come under this category: 11493, 11497 and 11549.

4 AVOIDABLE WASTAGE IN INTERNATIONAL ABSTRACTS

To give a slant to an abstract, the abstractor should have an intimate knowledge of the distinctive needs of the consumer of the abstract. This is obviously impracticable for an abstractor doing work for an international abstracting periodical. This accounts for the meagre appearance of slant in the sample of the 128 examples studied. Even in the cases where a slant can be sensed or suspected, it is difficult to ascertain whether it is due to the deliberate judgement of the abstractor or merely to the extent to which he has been habituated to give details in his abstracts. We can be sure that the slant is deliberate only if the same person has done the abstracting of an article both for the Biological Abstracts and the Chemical Abstracts. We find only two cases of this kind. In both the cases, the abstractor is the same person. There is perceptible difference in the abstracts contributed by him to the two abstracting periodicals.

5 NATIONAL DOCUMENTATION CENTRE

The abstracting work in a National Documentation Centre such as the Insdoc has also to be done without an intimate knowledge of the needs of a particular worker or class of workers. Therefore, abstracting at a National Centre cannot in any way be an improvement over that done in the abstracting at an International Centre. That is why the Insdoc does not give abstracts. It gives only the bare entry of each article. However, to give some of the benefits of an abstract with slant, the Insdoc arranges the entries in a classified sequence and breakes up the classified sequence with a system of well-featured subject headings. It is well known that a short abstract in a well featured classified arrangement can produce the same result as a long abstract in an alphabetical arrangement of entries. In the alphabetical arrangement, the abstract has to be lengthened in order to bring out factors implied in the feature headings of the classified arrangement. It is again for this reason that the Insdoc list of current scientific literature is in the classified form.

6 TIME LAG

An international abstracting periodical has to suffer a considerable time lag for two reasons. It aims at the universal coverage of all the published periodicals; and it provides abstracts. Both these factors are time-consuming. The time lag used to be even as much as two years. The very time taken to collect articles is utilised by an International Bibliographical Periodical to provide also abstracts of the articles, though as stated in section 4, impersonal international abstracting free from slant gives only poor satisfaction to users belonging to different subject fields. Of late, every effort is being made to reduce the time lag; but it has not been found possible to make it smaller than, say, six months. A study of the time scatter of our sample of 128 abstracts occurring in the Biological Abstracts confirms the present effort to reduce the time lag to about six months or even less if possible.

Average time lag	Number of articles
5 years	2
4 years	0
3 years	6
2 years	16
1 year	104

In respect of Biochemistry, the Biological Abstracts lags far more behind than the Chemical Abstracts as shown by the following table.

The frequency Table for the appearance in the Chemical Abstracts of the 112 abstracts appearing in April 1958 in the Biological Abstracts is as follows:-

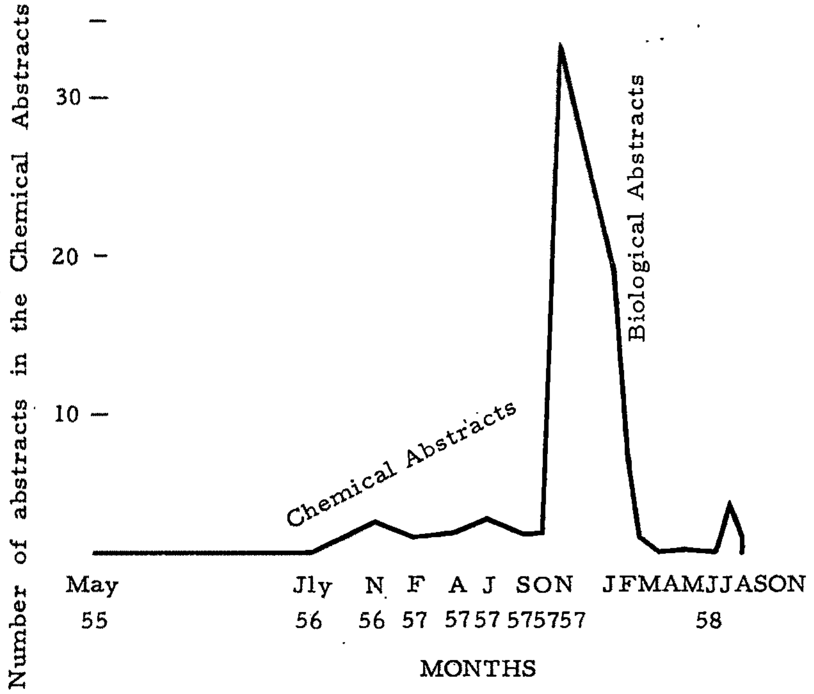
TABLE

1955	(May	1
1956	(July	1
	(November	3
1957	(February	2
	(April	2
	(June	3
	(September	2
	(October	2
	(November	33

Table continued

1958	(January	24	(July	1
	(February	20	(September	1
	(March	9	(October	4
	(April	2	(November	1
	(May	1		

The above table is visualised by the following frequency curve.



7 HANDICAP OF THE INSDOC

The primary objective of a national documentation list, such as the Insdoc list, being produced in addition to the production of International Abstracts is to overcome the timelag, inevitable in the latter. For this purpose the Insdoc list confines itself only to periodicals currently taken in India and thereby eliminates the time lag incidental to universal coverage. Further it abstains from giving abstracts and thereby eliminates the time needed for abstracting work. Moreover its classified arrangement with feature headings is not able to give the maximum benefit possible in lieu of abstracting, because it is not practicable to apply depth classification. This impracticability is due to the class number of an article having to be determined from its mere title and without access to its text. It is a case of "absentee classification". The title of an article is seldom fully expressive of all the relevant foci in all the relevant facets of the thought-content of the article. Therefore any attempt to practise depth classification is bound to fail. Indeed it will land us in wrong class numbers.

71 Bibliography of Scientific Publications of South and South East Asia

This handicap in respect of depth classification does not arise however in the case of the Bibliography of scientific publications of South and South East Asia being published by the Insdoc. This list is prepared with the full text of articles before the classifier. The Insdoc has not yet begun to practise depth classification even in this case due to certain temporary difficulties. It is hoped that these difficulties will be soon overcome so that co-extensive class number is constructed for each article bringing out the correct focus in each of its facets and providing a full contingent of feature headings by Chain Procedure. Then it will give the greatest possible benefit in lieu of abstracting. The extra time that will be required for depth classification is hoped to be eliminated with the cooperation of the publishers of the learned periodicals in this country. The proposal is to request the editors of the periodicals to send to the Insdoc the galley proof of the article. If this is done time lag will be eliminated.

8 ABSTRACTING WORK IN SERVICE LIBRARY

Thus at the national level, the purpose of the documentation work - viz to inform research workers about current articles simultaneously with their appearance - will be lost if abstracts are provided; and further even if done, the abstracts will have to be impersonal. As already stated in section 4, at the international level not only there is time lag, but also abstracts have to be impersonal. To get the full benefit of documentation work and service, however, abstracts should be done with adquate slant to meet the specific needs of each individual worker. This means that the abstractor should be in continous, intimate touch with the research work in progress. This will be practicable only in a service library serving a limited number of workers within its campus or at any rate within its neighbourhood. To increase productivity and to eliminate wastage of research potential, this local abstracting service is essential. Our present tempo of industrialisation cannot produce efficient results, unless adequate provision is made for research both in the applied and the fundamental sciences concerned. In due course each big industrial concern will have to maintain its own research wing. To eliminate wastage in the research potential of that wing, the industry should also maintain its own service library. The distinguishing function of such a library will be local abstracting service.

Till this stage is reached in our country there should be an adquate industrial library for each subject-field of industry either in one national centre or in a few regional centres. A first step in this direction has already taken in the Textile Industry in the establishment of regional centres in Ahmedabad, (Atira), Bombay, and Coimbatore. But unfortunately these centres have not yet begun to realise how much elimination of wastage of research potential and the resulting step-up in productivity can be secured by providing a good library with librarians capable of depth classification and abstracting work. As far back as 1948, one of us was asked to help in the selection of a librarian of such a calibre for one of the above centres. But unfortunately it proved to be too premature for the value of such a service to be fully appreciated, paid for, and maintained. However, things are bound to improve in future.

81 Training of Personnel for Local Service

One of the objectives of the endowment for the Sarada Ranganathan Chair for Library Science in the University of Madras has been to train librarians of a high calibre, to manage service-libraries associated with the industrial development of the country, and to do the necessary research in the techniques of depth-classification and abstracting, in order to provide depth classification and local abstracting service in the manner described in section 8. This has been clearly brought out in the memoranda furnished by one of us in the middle of 1956 to the Vice Chanceller of the University of Madras. That memorandum has indicated also some of the problems in documentation work, needing immediate as well as continuous research by the Department of Library Science associated with the Chair. It was also emphasized that the industries, the Council of Scientific and Industrial Research, the Council of Medical Research, the Indian Standards Institution, and similar bodies should be persuaded to come forward to provide research fellowship for work under the guidance of professor either on specific problems arising in the documentation services in the particular field of the concerned body or on fundamental problems which will be of use in many subject fields.

Paper G

PATENTS IN INDIA

S DUTTA
Insdoc, New Delhi

Gives a brief outline of the Patent System in general and describes in some detail the Indian Patent System. Shows the importance of patents as a source of information and enumerates the problems in patent literature search. Describes efforts made at present to exploit. Describes efforts made at present to exploit the patents and suggests ways for their fuller utilization. Some patent office problems are also briefly dealt with.

0 INTRODUCTION

A patent is a grant from the Government, acting through the Patent Office, which confers on the grantee, for a limited term, the exclusive privilege of making, selling and using an invention, and also of authorizing others to do so. In England, where the modern patent system originated, sovereign grants were made in the form of 'letters patent' (litterae patentes) or open letters, so called because they were not sealed up but exposed to view. The grants for invention became known as "Letters patent of inventions". The term 'patent' is derived from it.

01 What of a Patent

The "patent" is thus an industrial protected right, other similar protected rights being 'design', 'trade mark', and 'copyright'. These may be distinguished as follows:-

011 Patent .- relates to the invention underlying the manufacture of a vendible product.

012 Design .- relates to the external features of that product as they appeal to the eye.

013 Trade mark .- relates to the good-will of the manufacturer or dealer trading in the product.

014 Copyright .- relates to exclusive right in the reproduction of literary or artistic composition.

02 What is Patentable

The subject of a patent must be a manner of new manufacture. In essence, a patentable invention:

1 should relate to a manner of manufacture;

2 should be novel in the manner of manufacture;

3 should be the outcome of inventive ingeniuty;

4 should have utility; and

5 should not be contrary to law or morality.

03 Why of Patent

The practice of granting these limited monopolies for new invention, inspite of the general condemnation of monopolies as such, is regarded of definite value to the industrial and economic development of a modern society. The utility of the patent system in the national industrial development is universally accepted and exercised throughout the world.

04 A Dutch Experiment

An interesting experiment tried on the Dutch patent system in the nineteenth century illustrates the close relationship that exists between industrial progress and the patent system. In 1869 Holland abolished its patent system. But, it was noticed that the growth of Hollands' export trade of manufactured goods came practically to a standstill. So after 43 years, in 1912, Holland reintroduced the national patent system.

1 HISTORY OF PATENT SYSTEM

11 Earliest Patent

Long before a regular patent system developed anywhere, a number of isolated grants appear in various countries.

12 Earliest Patent System

The regular practice of granting patent, however, appears to have began in Venice about 1475. This seems to be confirmed by a declaration of the Senate dated 15th March, 1474, which said that if anyone made and brought to perfection in Venice any new and ingenious machine, not made previously in Venetian territory, others would be prohibited from making the same for 10 years without the consent and licence of the inventor; adding that the State would be at liberty to use the invention and that infringers would be fined 100 ducats and the infringing machine destroyed. Surprisingly, provisions of the modern patent system after 500 years, remain substantially the same.

13 Modern Patent System

Although Venice may claim to be the first state to have a regularised patent system, it was the later development in England that endured. Modern patent systems of the world owe their inspiration to the English example, on which they are generally based.

14 Patents in Many Lands

Almost every country (over 140) with any degree of industrial development has a patent law in force and many of them issue patents regularly (1, 2, 3).

141 England

The Statute of Monopolies, enacted in England in 1624, laid down for the first time the conditions on which patents of invention might might be allowed.

142 U S A

The United States of America was the second country in the world to enact a law of patents basis for which was laid in the Constitution adopted in 1787. The first patent, however, was issued on July 31, 1790 only.

143 France

The first patent law of France was passed in 1791. In the French Patent System, the patent applications are not subject to examination as to novelty.

144 Germany

The German patent law which came into force in 1877, has had a decisive influence upon the further development of patent legislation in the world. In this system, every patent application is examined for novelty, and after the patent is accepted, an opportunity is given to the general public to "oppose" the grant.

145 USSR

Prior to the first World War, Russia adopted the German system. The present law in Russia, promulgated in 1931 introduces interesting features. It is open to every inventor either to

1. apply for a patent, when he earns the right as patentee to exploit the invention within the limit imposed by Soviet Legislation on private and commercial activities; or
2. apply for a "certificate of authorship" which gives him a claim to recompense in case his invention is exploited by the Government or commercial corporations.

15 International Convention

Forty six countries, including India, are signatories to the International Convention for the Protection of Industrial Property (4). Under Article IV of the convention a person who has duly applied in a convention country for patent protection for an invention may claim "convention priority" for any patent application in respect of the same invention which he may make within the "convention period" (generally 12 months) in convention countries.

2 Indian Patent System

21 Patent Law in India

Substantive legislation for the protection of invention in India was enacted in 1856, 1859, 1888 and 1911. But until 1911 the expression "Exclusive privileges" was used for the term "Patent". Otherwise the enactments corresponded to the legislation in force at that time in the United Kingdom (5).

211 The Act of 1911

The Act of 1911 made important departures, and for the first time provided for the granting of a "patent" and the establishment of Patent Office for matters incidental or supplementary to the granting of patents. For detail of patent Act, rules and regulations see Part I of the latest edition of the Patent Office handbook published by the Government of India, Manager of Publications.

22 Jurisdiction

The Act of 1911 extends to the whole of India except Jammy and Kashmir. A patent granted till 1939 by the Indian Patent Office is operative in Burma also. Patents bearing dates prior to the 1 April 1937 and in force at that time are operative in Aden. Indian patents granted prior to 15th August 1947 have effect in Pakistan as well.

221 Reciprocal Arrangements

Reciprocal arrangements for the mutual protection of inventions and designs exist between India and the following countries:

1. Australia
2. Canada
3. Eire
4. New Zealand
5. Pakistan
6. Union of South Africa

Reciprocal arrangements for the protection of invention only, exist between India and Ceylon.

23 Procedure for Obtaining a Patent

231 Steps

The procedure for obtaining an Indian Patent involves the following steps:

1. Filing an application for patent;
2. Filing a "Complete specification" either along with the application or following the "Provisional specification" filed along with the application.
3. Examination of the application by the Patent office;
4. Acceptance of the application by the Patent Office and its announcement in the Gazette of India. It is then

kept open for opposition for four months;

5 Overcoming opposition on the grant of the patent if the grant is opposed by any person; and

6 Sealing the patent.

232 Time limit

The aforesaid steps should be completed within a prescribed time limit (6). Legal minimum time limit for obtaining patent is about 6 months, and maximum 2 years (plus an extension period of 4 months). Normally it takes about 18 months for the sealing of a patent from the date of filing of the application.

2321 Term of a Patent

The normal term for an Indian patent is 16 years, and is reckoned from the day when complete specification was filed. Same is the case with British patents. In the U.S.A. and Canada, the 17-year term is reckoned from the date of the grant. Under special circumstances the term can be extended.

233 Patent Specification

A patent specification contains the following details:-

1 Heading, which includes the name and address of the patentee or patentees, the assignee and the address thereof, the patent number, the date of application, and the title of the invention;

2 Brief statement of the general nature or the objects of the invention;

3 Explanation of the drawings reproduced, if any;

4 Specific, detailed description of one or more ways of embodying and carrying out the invention; and.

5 One or more claims that define concisely and comprehensively the invention covered by the patent.

24 Sources of Patent Information

241 Weekly Notifications

Part III, Section 2 of the Gazette of India contains weekly lists of applications for patents made, applications accepted, specifications printed, patents granted, patents renewed, patents ceased, and other matters notified by the controller of patents for the information of the public.

242 Patent Office Publications

The publications of the Patent Office are:

1 The Patent Office handbook;

2 A Guide to inventors;

3 Specifications of invention;

4 The Patent Office Journal - This annual publication includes a subject matter index classifying patents according to the various branches of industry;

5 Inventions (consolidated subject matter index, name index and chronological lists) - there are seven such consolidated lists covering the period 1859-1932.

6 Patents for inventions: Abridgement of specifications - published in 66 groups, for every set of 5,000 patents. Each group volume contains abridgements of specification relating to inventions in respect of subjects indicated fully in the subject matter index; and

7 Annual reports of the working of the Patent Office.

25 Inspection Centres

The Appendix 'H' of the Annual report of the Patent Office contains a complete list of inspection centres in India and abroad. Patent literature can be inspected free of charge at these inspection Centres.

3 PATENT LITERATURE

31 Primary Literature for Applied Sciences

Patents make up an important part of the literature of applied sciences, particularly chemical technology. They are primary sources of information because an invention must cover new and useful information to be patentable (7).

32 Chemical Technology

The patent literature is a better source of information on many phases of chemical technology than either reference books (soon outdated) or even scientific and technical papers. Much of the work done in laboratories having industrial applications are reported and described in patents only. It is estimated that more than 20 per cent of the patent literature pertain to the field of applied chemistry (8). It is about 40 per cent in the case of Indian patents (9).

33 Growth of Patents

Like the periodical literature, the patent literature is voluminous and is growing rapidly. Almost every country with any degree of industrial development issues patents and some of them have been issuing them for many years. It is estimated that in 1955, there were about 7 million patents throughout the world. The corresponding figures was only 1.2 million in 1900 (10).

331 Growth of Indian Patents

The accompanying table depicts the growth of Indian patents during the last ten years (11).

Year	Application filled from			Total	Patents		Awaiting printing
	Indians in India	Foreigners in India	Foreign countries		Sealed	Printed	
1950	352	47	1452	1851	1610	2582	2253
1951	422	42	1644	2108	1714	2468	1603
1952	473	45	1754	2272	1602	1061	2305
1953	406	55	1774	2235	1856	1680	2535
1954	403	51	2043	2497	1811	2541	1942
1955	403	43	2290	2736	1945	1866	2064
1956	482	58	2527	3067	2006	1695	2532
1957	527	82	2847	3456	2312	1678	3402
1958	529	73	2970	3572	3011	1603	2416
1959	671	55	3239	3965	2433	2120	3648

4 PATENT LITERATURE SEARCH PROBLEMS

Enormous growth in patent literature, and unsatisfactory arrangement obtaining for the retrieval of information from them, make the patent literature search a trying job (12, 13). So much so, in many countries people are officially advised to consult professional literature searchers for their problems. Many progressive industrial concern maintain a highly qualified staff to do patent literature search in their field of interest.

41 Numbering of Patents

Patents are arranged by their serial numbers and referred to by the same. Indian patents get serial numbers as soon as they are filed, and published patents carry the same serial number. Since a number of patents filed are not finally accepted and declared void, there are many gaps in the serial number of patents sealed and published. This creates a problem in the acquisition programme, since a scrutiny has to be made to ascertain whether a certain number is wanting in the collection of the library or truly void. In U.S.A. and some other countries patents get one set of serial number when they are filed and another set when they are finally granted. Japanese patents are given new set of serial numbers for each year.

42 Grouping of Patents

To facilitate searches patents are classified, or more correctly, broadly grouped. The classification system of the various countries differ in most cases. They all have limitations, however, since the field covered is broad and different kinds of patents and searches involve different points of view. Amongst these, German classification system is considered to be the most satisfactory, and Swedish, Norwegian, and Danish patents are classified according to the German system. The Austrian classification is only slightly different from the German (14). In the fourth Aslib Conference, classification systems of Germany, U.K., and U.S.A. were discussed in detail.

421 Grouping of Indian Patents

The subject matter of Indian patent specifications has been classified under 208 main classes which are further divided into a number of sub-classes. These classes have been grouped into 66 groups. A compilation of catchwords and phrases leading to various classes mentioned above are given in Reference index, publication issued by the Patent Office for official use.

43 Index to Patents

A properly consolidated subject index for the patents issued is an essential tool for the patent literature search.

431 Subject-Matter Index

The index published in the Patent Office journal forms a continuation of the indexes contained in the Subject-matter index 1912-32. Entries are arranged alphabetically and grouped under main class heading, and referred to the patents by their serial numbers. Patent Office journal of 1946, 1950 and 1956 contains consolidated subject index for the years 1940-43m 1944-46, and 1952-54 respectively. The publication Inventions is long out of print.

432 Consolidated Index

Thus we see that after 1932, no consolidated index of Indian patents for any considerable period is available. In the absence of long period consolidation of Abridgements (see sec 44), consolidation of subject-matter index for a longer period is desirable.

44 Abridgements

Abridgement of patent specifications are published in "Group volumes" identified by group numbers. Since 5,000 patents (The British Abridgement of specifications are published for every series of 20,000 specifications) are consolidated in each volume, these serve as index for patents issued in less than two years. Moreover, the latest Abridgements available refer to the year 1948 and earlier, thus seriously limiting their value as tools for retrospective search.

5 WORKING OF PATENTS

Although patents are important sources of technical information, their main value lies in their effective utilisation. If patents are not exploited, it goes against the very basis of the patent system which is established on the assumption that it is conducive to the industrial progress of the country. To implement this inherent stipulation, in most countries of the world a patent is granted and exclusive rights are for a limited period (4 years in India) reserved to the patentee on condition that within a reasonable time the invention is "worked" in the country.

51 Nominal Working

It is not always feasible to arrange for an article to be manufactured in each country where it is patented. The patentee must, however, show that he has made an attempt to do so, and for this purpose it is usual to advertise or make written offers of lincence to work the invention; that procedure is known as "nominal working", as opposed to "actual working". In India nominal working is accepted. For most other industrially advanced countries actual working is required. Working is not required in U S A.

52 Governmental Effort

In Russia, a duty is imposed on the Government and public authorities to promote inventions. In England, machinery for actively promoting such use has been provided by the Development of Inventions Act 1948, which has authorised the setting up of a National Research Development Corporation, whose functions are those of securing, where the public interest so requires, the development or exploitation of inventions and of dealing in patent rights.

521 National Research Development Corporation of India

The National Research Development Corporation of India was established in December 1953 with the aim of "to stimulate development of patents and inventions arising out of researches conducted in research institutions financed out of public funds and, where feasible in the public interest, of patented inventions from invididuals also. Till the end of 1953, Industrial Liaison Committee which dealt with patents and processes arising out of researches sponsored by C S I R and Patents Advisory Committee which was concerned with exploitation of government owned patents, both under the Ministry of Commerce & Industry, were responsible for this work.

Total number of investigations referred to N R D C upto 31 March 1959, were 503. Out of these 70 inventions were released free and 100 abandoned, leaving a balance of 333 effective inventions. Total number of projects instituted during this five year period were 11, and 67 inventions were licenced (15).

53 Development of Nationally Useful Patent

Although there are nearly 16,000 patents in force in India and on an average 3000 patents are granted each year, a very low percentage of these are exploited. There is, thus a lamentable wastage of inventive ingenuity. In a symposium held in Calcutta in February 1956 during the centenary celebration of the Indian patent system, a plea was made that "patents should be grouped and examined in the light of the broad objectives of the national plan and a comprehensive scheme for the development of nationally useful patents should be drawn up" (16). In order to work such a scheme in practice the first essential step appears to be to expedite the bringing out of an up-to-date compilation of classified abridgements. This classified information would bring within the realm of practicability the selection and development of patents on a planned basis. Developmental work may be undertaken by the N R D C.

54 Practical Difficulties

But there are many practical difficulties in the way of effective utilization of patents. In relation to minor inventions the patent system works more or less as it should. In relation to major inventions it works well enough as a system for collecting and disseminating technical information, but as a system for encouraging the making and commercial use of inventions it is not very satisfactory. Once a new technique or product has been developed and shown to be commercially workable, a competitor with the technical resources of modern industry at his disposal will not find it very difficult to work out another way of doing the same thing. This tendency is emphasised by the high cost of litigation about patents (17).

541 Incomplete Disclosure

Another factor for poor exploitation of patents is incomplete disclosure of information. Patent disclosures are supposed to be full, clear, and exact but they seldom measure upto this standard. Disclosures are sometimes inadequate and sometimes misleading. Often experimental details are not given sufficiently. A patent application sometimes intentionally has the real essence of the invention hidden away in a single inconspicuous paragraph. Often patents, worded by lawyers, are written in a form that is difficult to strip of legal terminology to get down to facts (18). This factor may be a sequal to the malpractices mentioned in the previous section.

6 PATENT OFFICE PROBLEMS

61 Patent Search

At present, except for a few private agencies, no facilities for patent search exist in India. Even in the Patent Office comprehensive patent search is not undertaken with the result that sometimes costly and time consuming litigation has ensued after a patent has been accepted. A bill (Patents Bill, 1954) is under consideration to make it obligatory on the Patent Office to make a thorough literature search for ascertaining the novelty of invention before a patent is accepted. Once these facilities are fully developed in the Patent Office, the services can be utilized for other types of patent search as well. In course of time specialized search facilities may be developed in some of the patent inspection centres, e g chemical literature search at the National Chemical Laboratory, search of metallurgical literature at the National Metallurgical Laboratory and so on.

611 Personnel

For making a thorough literature search possible, provision of adequate qualified staff is absolutely essential. In this connection it would be worthwhile to study the practice followed in some of the advanced countries.

6111 American Patent Office

In the Patent Office, literature searching forms a large part of the patent examination procedure. This enormous task concerns itself with the screening of all the world's technical literature, including both foreign and domestic patents. The work is divided among a number of of examining divisions, each division having jurisdiction over certain assigned fields of invention. Each division is headed by a primary (or principal) examiner and staffed by a number of examiners. The examiners perform the work of examining applications for patents and determine whether patents can be granted. The examiners also determine when an interference exists between pending applications, or a pending application and a patent, institute intereference proceedings in such cases and hear and decide certain preliminary questions raised by the contestants. At present the US Patent Office has about 2, 300 employees of whom about half are examiners and others with technical and legal training. Patent applications are received at the rate of over 70, 000 per year (19).

6112 Delay

Inspite of enormous staff, it takes on average nearly 3 years for a patent to be accepted in America. The problem has become so acute, that programme is at hand to carry out the literature search mechanically (20).

62 Classification Problem

In India, the question of literature search by electronic machines does not arise at present, because of the enormous cost involved. But to make the search more expeditious, and efficient, a more refined tool than broad subject grouping, as is being used at present, is required. Classification seems to be the answer to this problem both for manual searching as well as for mechanical searching. But then, classification of patents itself presents a very peculiar problem.

621 Search Elements

Patents cover the field of:-

1 Manufactured products;

2 Process for manufacturing the same;

3 Apparatus used in practicing manufacturing process;

4 Materials used in manufacturing processes for making the manufactured products;

5 Non-manufacturing processes; and

6 Apparatus used in practicing non-manufacturing processes.

The search operation must satisfy all of the diverse interests within the above six categories. Thus a patent office search is invariably for combinations. These combinations are of known factors in alleged new relation to give some new or improved function or results (21).

622 Faceted-Depth Classification

Since different kinds of patent searches involve different points of view "any classification system which is going to be useful for patent search purposes must be an organic sort of entity ... for it must be able to grow and to adjust itself to an ever changing environment ... A good classification system ought to be capable of both micro- and macro-evolution. The scheme must have built into it the capacity to effect comparatively minor adjustments in its structure, not too extensive new connections between items; and the associated computers should be able automatically to make the necessary readjustments in its programming, in its memory organs, etc." (22). Perhaps the faceted-depth classification based on postulational approach (23) coupled with chain procedure (24) being developed in India may provide the right tool for helpful arrangement and easy retrieval of patents.

63 Printing

Delay in printing of patents is a perennial problem with the patent office. Each year it carries a back-log of nearly 2,000 sealed patents awaiting printing. Once a patent is notified in the Gazette of India, Insdoc starts receiving requests for supply of a copy of the specification -- which cometimes takes as much as two years to get printed. This difficulty can be obviated if arrangements are made at the Patent Office to make photographic master copy of the original and supply photo-reproduction of the patent on demand. Even-cheaper copying processes, e.g. diazo, will serve for most of the purposes, when a copy is not needed for long preservation (25).

64 Storage

Problem of storage of patents at the Patent Office -- which must be considerable, considering the fact that nearly 3000 patents are sealed each year -- gets automatically solved if the above procedure is adopted. Only item needing storage will then be master copies of the patents sealed.

7 DISSEMINATION OF PATENT INFORMATION

Rama Pai, formerly Controller of Patents & Designs, has analysed the causes for India's apathy to the patent system (26), and one of the remidies he suggests is proper publicity.

One important factor for the proper utilization of Indian patents would be effective dissemination of patent information. Besides original patents and official patent office publications (27) other sources of patent information may be classified as follows:-

1 Scientific and technical periodicals;
2 Abstracting and indexing periodicals;
3 Patent digests and lists;
4 Court records;
5 Periodicals devoted to patents; and
6 Other services.

71 Scientific & Technical Periodicals

Many a journal devoted to specific branches of technology, have abstracts sections which usually include abstracts of patents relevant to the industry. They often give a fuller abstract than is found in the general abstracting journals. Some of the foreign journals which provide such abstracts in special fields are: American dyestuff reporter, Chemie et industrie, International sugar journal, Journal of the American Ceramic Society, Journal of applied chemistry, Journal of the Institute of Petroleum, and Kolloid Zeitschrift.

711 Indian Periodicals

In India, Journal of Scientific & Industrial Research had been publishing since its inception (1942-43) a select list of patents in the field of chemistry and technology accepted and announced in the Gazette of India. It was presented under the same broad group headings used by the Patent Office. This feature was discontinued from 1957, but was taken up in the Research and industry which was started in 1956. It covers on an average 60 patents every month out of a total of nearly 250 announced every month in the Gazette of India. A comprehensive coverage of patents taken by the Council of Scientific & Industrial Research is made in the C S I R News. Very few other Indian periodicals e g Food science, Bulletin of the Central Leather Research Institute, cover Indian patents. Chemical age of India publicizes those Indian patents which have been taken by N R D C for utilization.

72 Abstracting and Indexing Periodicals

Abstracting and indexing periodicals are perhaps the best sources of patent information, and perhaps the only source consulted by many patent literature searchers. There are many excellent abstracting and indexing periodicals in the field of chemistry and specialized branches of technology. The most well known service in the field is Chemical abstracts which covered nearly 22,000 patents from 21 countries in 1958. There are annual and cumulative patent number indexes that are classified by country.

Chemisches Zentralblatt, also has a good coverage of patents (25,600 in 1958), particularly continental patents.

Referativnyi zhurnal, Khimiya of the U S S R covered in 1958 about 12,000 patents from 18 countries. Soviet patents are not abstracted. In 1960, separate section has been published for patents.

The following table gives comparative coverage (in 1958) for the three abstracting periodicals described:-

	Country issuing the patents	Number of patents abstracted in		
		Chemical Abstracts	Chemisches Zentralblatt	Referativnyi Zhurnal, Khimiya
1	Australia	72	352	66
2	Austria	144	823	29

Table Continued

Country issuing the patents		Number of patents abstracted in		
		Chemical Abstracts	Chemisches Zentralblatt	Referativnyi Zhurnal, Khimiya
3	Belgium	80	1380	-
4	Canada	64	351	366
5	Czechoslovakia	56	-	60
6	Denmark	1	353	69
7	Finland	-	12	5
8	France	504	3670	1254
9	Germany (E)	352	499	300
10	Germany (W)	4890	5235	2526
11	Holland	125	1130	2
12	INDIA	56	7	-
13	Israel	88	-	-
14	Italy	312	419	-
15	Japan	2667	-	1627
16	Mexico	-	-	5
17	Norway	1	389	42
18	Poland	-	-	162
19	Spain	56	-	-
20	Sweden	48	183	150
21	Switzerland	223	1559	216
22	U.K.	2808	4285	677
23	U.S.A.	8432	4968	4513
24	U.S.S.R.	984	-	-
	TOTAL	21963	25615	12069

60 Indian patents. Abstracts of the Central Board of Irrigation & Power, Documentation Notes, N. B.O. abstracts - some of the well known Indian abstracting periodicals - do not cover patent literature. Steps may be

721 Indian Abstracting & Indexing Services

There is no Indian Abstracting and indexing periodical in the field of chemistry and technology. Chemical abstracts covers only about

Chemical patents published by the Chemical Abstracts Service is a new express service, featuring machine indexing of current and patent literature. It is a pilot study on the model of Chemical titles published by the same Service.

taken to exhaustively index the Indian patents in such classified indexes as Insdoc list or Bibliography of scientific publications of South and South East Asia.

73 Patent Digests & Lists

'The number of digests of patents on specific subjects is small. Many of them are German publications and are often based on German patents only. Some of the important publications in this field are: Fortschritte in der anorganischchemischen Industrie an Hand der deutscher Reichspatente dargestallt, 5V., Doyles digest of patents relating to coaltar dyes and allied compounds, Fortschritte der Teerfarbenfabrikation und verwandter Industriezweige, 26V., Chemical patents index, etc.

731 Indian Digests

The only Indian publication in this category is perhaps the Patented inventions of the C S I R, which is a compilation of 132 of patented inventions of the Council of Scientific & Industrial Research for the period 1940-50. The specifications are arranged in the numerical order and indexes (of inventions and inventors) are given at the end.

74 Court Records

Valuable information may be obtained at times from court records of patent cases. The Official Gazette of the United States Patent Office gives brief reports on selected decisions in patent cases. Some useful sources of legal decisions on US patents are: Decisions of the Commissioner of Patents, Court of customs and patent appeals, Reports of the patent section, and U.S. Supreme Court reports for patent, copyright and trade mark cases.

741 Indian Sources

The Patent Office journal gives a list of special proceedings regarding patents for which there has been opposition, appeals to the High Court, etc. The Patent Office handbook also contains Chapters on proceedings in court as well as decisions of courts.

75 Periodicals Devoted to Patents

Some of the periodical publications having international coverage are: Research, patents, and trademarks, 1947 - (formerly the International bulletin of industrial property), Dessins et modeles internationaux, and Revue internationale de la propriete industrielle et artistique.

76 Other Services

Besides the publications described, various other types of services are available in some of the industrially developed countries:-

761 Microfilms

Patent classification microfilm (10 reels, 3,000,000 patents. Available as PB 144 504 from the Library of Congress, Washington 25, D.C. at $6.00/reel and $50.00/set) is the 16 mm copy of the official records of the classification of U.S. patents issued upto September 23, 1959. It is arranged numerically in class and sub-class order according to the patent office Manual of classification. There is also Patent classification microfilm. Classification of design patents available (Pb 144 625 Library of Congress, Washington 25 D.C).

762 Specialised Service

The British Patent Office, on opening a deposit account, supply to the subscriber all specifications which are relevant to a particular industry (28). This is of interest to industrialists, specializing in a line of technology, and for whom it may not be profitable to maintain a full-fledged patent literature search facilities. A comprehensive service on micro-cards for U.S. patents is available in U S A. A private organization, Information for Industry supplies, on a subscription basis, a cumulative bimonthly uniterm index to chemical patents (29).

763 Lapsed Patents

Publicity may be given to lapsed patents of the nature which may be attractive to small scale industrialists. They are very often not in a position to licence patents in force.*

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13	Sec 4	Bennet (E M). Searching classified patent specifications. (Aslib Proc; 4 1952; 75-82).
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17	Sec 54	White (T A B). Patents for invention and the registration of industrial designs. 1950. 24.
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22	Sec 622	Warren (Weaver). loc cit.
23	Sec 622	Ranganathan (S R). Postulational approach to faceted classification (Depth classification 29). (Ann lib sc; 5; 1958; 33-51).
24	Sec 622	Ranganathan (S R). Classified catalogue code with additional rules for dictionary catalogue code. Ed 4. 1958. Pt 3.
25	Sec 63	Donker Duyvis (F). Document reproduction service (Unesco Bull Libr; 14; 1960; 248).
26	Sec 7	J Sci Industr Res; 7; 1948; 271-72.
27	Sec 7	Crane (E J) etc. loc cit.

28 Sec 762 Gravel (F W). Patents and the patent office library (Aslib Proc; 7; 1955; 99).

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Paper H

CALCUTTA UNIVERSITY CENTRAL LIBRARY

CONNECTING SYMBOLS FOR SPACE AND TIME IN CC

S R RANGANATHAN

Traces the evolution of connecting symbols in CC from the single one of colon to the six currently used. Shows how this was made necessary by the helpfulness of sequence of classes as determined by the idea plane independently of the limitations of the notational plane. Indicates the corresponding increase in the versatility of the notational system. Points out the violation to helpful sequence caused by the use of the same symbol from time and space facets, experienced at the level of the depth classification of micro documents. To remove this violation, the use of the quotation starter (') is advocated as the connecting symbol for time. Its ordinal value is fixed as being between those of zero and full stop. This allows telescoping of space levels. Its help in classifying the documents on the administration of Local Bodies is demonstrated. New problems for further research are indicated.

Note:- CC= Colon Classification

1 SINGLE CONNECTING SYMBOL ONLY

Table1

Subject	Ed 1(1933)	Ed 4(1952)
1 History of library science in India brought up to 1950's	2v2:N5	2v2 N5
2 Library science	2	2
3 Library conditions in India brought upto 1950's	2u2:N5	2.2.N5
4 Library management	24	2:8
5 Library management in India brought up to 1950's	24u2:N5	2:8.2.N5

[The above arrangement is according to ed 4]

This article appeared originally in this periodical, V 8 No 1. On account of the many inadvertent mistakes that had crept in, it is republished here with corrections.

11 Subjects for Consideration

Let us consider the class numbers, given in the table on previous page, as constructed by ed 1 and ed 4 respectively of CC.

12 Ed 4(1952)

Viewed from the idea plane, the sequence of the subjects, as given in the above table, is helpful. The CC numbers according to ed 4(1952) implement in the notational plane these findings of the idea plane.

13 Ed 1(1933)

But the CC numbers according to ed 1(1933) force these subjects into the following sequence.

1	Library conditions in India brought up to 1950's	2u2:N5
2	History of library science in Indian brought up to 1950's	2v2:N5
3	Library science	2
4	Library management in India brought up to 1950's	24u2:N5
5	Library management	24

14 Violation of the Canons of Decreasing Extension

In this sequence, the description of the library conditions within a specific space-time-mesh (subject 1) gains precedence over a general account of library science (subject 3). So also the description of library management within a specific space-time-mesh (subject 4) gains precedence over a general account of library management (subject 5). This violates the canon of Decreasing Extension [P1]. For, a general account of a subject is of greater extension than an account of it as it obtains within a specific space-time-mesh.

15 Not Approach Materials

At the same time, the descriptive accounts of libraries in diverse space-time-meshes cannot be taken to be Approach Materials [P3] such as the bibliography, encyclopaedia, or history of library science can be.

16 Failure due to Use of a Single Connecting Symbol

Why did ed 1(1933) to ed 3(1950) fail to implement the findings in the idea plane? Because, the versatility of the notational system of ed 1(1933) to ed 3(1950) was too poor for the purpose. This poverty in versatility is really traceable to the same connecting symbol (:) being used for all kinds of facets.

17 Incidence of Homonym

The notational plane would have brought subject 1 after subject 3, as required by the idea plane, if the Geographical Facet had been introduced by the connecting symbol (:) instead of u. Then, the class number of subject 1 would have been 2:2:N5. But according to the Facet Formula prescribed in ed 1(1933) to ed 3(1950), the above number would have represented "Public library in 1950's". Thus 2:2 would have become a homonymous class number meaning at once "Public library" and "Library conditions in India". Such an incidence of homonym is fatal in a classificatory language. For different subjects would get promiscously mixed up. Chaos will prevail among subjects instead of helpful arrangement. All the Laws of Library Science would thereby be violated.

18 Avoidance of Homonym

Homonym is enemy number one to classification. Its avoidance should have priority over everything else. Therefore ed 1(1933) had to change the number for one of the subjects, forcedly though it might be. Accordingly, it moved the descriptive account to the group of approach materials. Since (u) was mnemonic for "Survey", it replaced the (:) before the Geographical Facet by (u). This had to be continued even in ed 3(1950), as no means were found to increase the versatility of the notational system.

2 MULTIPLICITY OF CONNECTING SYMBOLS

21 (PMEST)

However, the problem was continuously kept in mind. In 1942, the concept of Five Fundamental Categories--Personality, Matter, Energy, Space, and Time (PMEST) was first hit upon [L1]. But during the next years, it was used only as an aid to description. It was only in 1949 that its potentiality to increase the versatility of the notational plane was secured [O1].

22 Postulates

The exploitation of this potentiality is now based on the following two postulates:-

1 Postulate of Isolate Facets. Each facet of any subject-- other than its basic facet-- can be deemed to be a manifestation of one and only one of the five fundamental categories (PMEST) [E1]; and

2 Postulate of Connecting Symbols (as it was till 1961). The connecting symbols to be inserted in front of the various kinds of facets in CC are as given in the following table [E2].

Facet	Connecting Symbol
[P]	, (Comma)
[M]	; (Semi colon)
[E]	: (Colon)
[S]	. (Full stop)
[T]	. (Full stop)

The class numbers formed according to ed 4(1952) to ed 6(1960) are based on these postulates. They are given in the last column in the table 2 in sec 31.

23 Essence of the Postulates

From our present angle, the essence of the two posulates is that the single connecting symbol (:) has given place to four connecting symbols. These connecting symbols function also as indicators of the nature of the facets succeeding them. All the five kinds of facets can be independently provided in a class number without the creation of homonyms.

3 SINGLE MANIFESTATION OF SPACE ONLY

31 Subjects for Consideration

Let us next consider the following class numbers as constructed by ed 2(1939) and ed 6(1960) of CC:

Table 2

Subject	Ed 2(1939)	Ed 6(1960)
1 Travels in Asia	U8:4	U8. 4
2 Travels in Himalayas	U8:4MH	U8. 4. 2H
3 Travels in India	U8:44	U8. 44
4 Travels in Vindhyas	U8:44MV	U8. 44. 2V
5 Travels in South India	U8:441	U8. 441
6 Travels in Anamalai Hills	U8:441MA	U8. 441. 2A

7	Travels in Tamil Nadu	U8:4411	U8. 4411
8	Travels in Serverai Hills	U8:4411MS	U8. 4411. 2S
9	Travels in Kerala	U8:4412	U8. 4412

32 Ed 6(1960)

Viewed from the idea plane, the sequence of the subjects, as given in the above table, is helpful. This helpfulness is determined in essence by the helpfulness of the sequence of the isolates in the space facet. In this sequence, a mountain is brought between a conventional geographical area of the least extension containing it and the conventional areas whose extension is just too small to contain it. The CC numbers according to ed 6(1960) implement in the notational plane what is found by the idea plane to be helpful.

33 Ed 2(1939)

But the CC numbers as constructed by ed 2(1939) forced these subjects into the following unhelpful sequence:

Table 3

1	Travels in Asia	U8:4
2	Travels in India	U8:44
3	Travels in South India	U8:441
4	Travels in Tamil Nadu	U8:4411
5	Travels in Serverai Hills	U8:4411MS
6	Travels in Kerala	U8:4412
7	Travels in Anamalai Hills	U8:441MA
8	Travels in Vindhya Mountains	U8:44MV
9	Travels in Himalayas	U8:4MH

34 Unhelpful Sequence

The above sequence is easily seen to be unhelpful. It is best seen by extracting the four subjects forming travels in the four different mountains. We get the following sequence:

Table 4

1	Travels in Serverai Hills (a small mountain within Tamil Nadu)	U8:4411MS
2	Travels in Anamalai Hills (a mountain partly in Tamil Nadu and partly in Kerala)	U8:441MA
3	Travels in Vindhya Mountains (a bigger mountain ranging over several states of India)	U8:44MV

4	Travels in Himalayas (a still bigger mountain ranging over India and several countries of Asia).	U8:4MH

The above sequence certainly violates the Canon of Decreasing Extension as viewed from the extension of the conventional geographical area to which each mountain has to be assigned.

35 Attack on the Problem

From 1939, this problem had been simmering in the mind. The invitation by the FID in 1950 to take charge of its Committee on General Theory of Classification FID/CA stimulated intensive work on problems of this nature belonging to the level of depth classification. This first fruit of the struggle [O3] did little more than to lay bare the difficulties encountered in the notational plane. No solution could be found till 1954.

36 Failure due to Recognition of a Single Manifestation Only

Why did ed 2(1939) to ed 5(1957) fail to implement the findings in the idea plane? Because the versatility of the basic concepts in the idea plane was too poor for the purpose. This poverty in versatility can now be traced to failure to recognise the possibility of more than one manifestation of the fundamental category Space in one and the same subject.

4 MULTIPLICITY OF LEVELS OF SPACE

The concept of 'Level' for the fundamental categories Personality and Matter was first hit upon in 1952 [O4]. It was conjectured that level can also occur in space. It was included in Report 2 to FID/CA. However, several attempts to implement the concept in the notational plane failed. An anthropomorphic approach brought a possible solution within sight [C1].

41 Featured Space

This led to the concept of Featured Space, its being treated as an organ of a regional division of the surface of the earth, and its being therefore assigned to the Second Level of Space. This was finalised in 1956. A schedule for second level was constructed [P2;S1]. But it was considered premature to include it in ed 5(1957) of CC. An extract from it, likely to be needed in the classification of micro documents or conventional books was included in ed 6(1960). This concept of levels of space has enabled the notational plane to implement the helpful sequence determined by the idea plane, as shown in the table 2 in Sec 31.

5 CONNECTING SYMBOL FOR TIME AND SPACE

51 Subjects for Consideration

Let us now consider the following class numbers as constructed by ed 6(1960) of CC and as proposed for ed 7.

Table 5

	Subject	Ed 6(1960)	Proposed
1	Travel in Madras State in 1960	U8. 4411. N60	U8. 4411'N60
2	Travel in Serverai Hills in 1960	U8. 4411. 2S. N60	U8. 4411. 2S'N60
3	Travel in Madras (City) in 1960	U8. 4411. 3M. N60	U8. 4411. 3M'N60

52 Proposed Class Numbers

As viewed from the idea plane, the sequence of the subjects as given in the above tables is helpful. This helpfulness is determined in essence by the helpfulness of the sequence of the host classes ending with the second level of space facet. In their sequence, travel in an area of greater extension (in Madras state) has precedence over travel in an area of smaller extension (in the Serverai Hills and in Madras City respectively). This sequence is in conformity to the Canon of Decreasing Extension [P1]. The proposed class numbers implement in the notational plane what is found by the idea plane to be helpful.

53 Ed 6(1960)

But the CC numbers as constructed by ed 6(1960) force the subjects into the following unhelpful sequence:

Table 6

1	Travel in Serverai Hills in 1960	U8.4411.2S.N60
2	Travel in Madras (City) in 1960	U8.4411.3M.N60
3	Travel in Madras (State) in 1960	U8.4411.N60

54 Violation of the Canon of Decreasing Extension

The above sequence violates the Canon of Decreasing Extension [P1]. This is easily seen by extracting the host classes of the subjects obtained by omitting the Time Facet. This was realised in the course of an intimate study of Depth Classification along with Shri P B Roy, Librarian of the Commercial Library of the Government of India, during January to February 1961.

55 Ad Hoc Solution

We first attempted to get over the difficulty by prefixing Z to every isolate number in the space facet of second level. Then the helpful sequence was restored as shown by the following table:

Table 7

1	Travel in Madras (State) in 1960	U8.4411.N60
2	Travel in Serverai Hills in 1960	U8.4411.Z2S.N60
3	Travel in Madras (City) in 1960	U8.4411.Z3M.N60

Roy rightly insisted that this was only an ad hoc solution. It was more like treating the symptom than removing the cause of the disease and the symptom.

56 Failure due to Use of the Same Connecting Symbol for Time and Space

The root cause of the trouble was the use of the same symbol (.) as the connecting symbol for time facet as well as space facet. While designing the connecting symbols for the fundamental categories in 1949, this became necessary [O1]. This was the result of the decision to use the punctuation marks as connecting symbols for the fundamental categories. There are only four punctuation marks as against the five fundamental categories.

57 Ostrich-Like Wish

Ostrich-like, it was hoped that this forced choice of one and the same connecting symbol for time and space would not lead to any catastrophe. This has now turned out to be a fond hope and a false wish. Sayers had warned me in 1924, while starting the design of CC, that unexpected difficulties would appear as the depth of the classification needed to be increased in order to meet the demands of formations of deeper strata in the Universe of Knowledge in course of time. It is not wise to design the notation having in view only the superficial strata of knowledge that might get embodied in books for the time being. The use of a single connecting symbol for all facets led to difficulties within a period of 20 years. This became acute after World War II by the demand of the Depth Classification needed for the documentation of micro-documents. Even books are now rapidly appearing making these difficulties acute. Four connecting symbols in the place of one helped us till now to tide over the difficulties. Wider practice of documentation and the greater proliferation of micro thought have now begun to create difficulties traceable to the use of one and the same connecting symbol for time and space.

6 DIFFERENT CONNECTING SYMBOLS FOR TIME AND SPACE

61 Long Range View

It was, therefore, decided that the root cause of the difficulty should be removed rather than resort be had to ad hoc make-shift remedies such as prefixing Z to the isolate numbers in second level space. Transition from macro thought to micro thought called for different connecting symbols to as many of the five fundamental categories as possible. We are now on the eve of transition from micro thought to "spot thought" on the analogy of the current transition from micro analysis to "spot analysis" in analytical chemistry. In the classification of "spot thought" different connecting symbols should be used for each of the different fundamental categories time and space. As already stated in sec 23, a connecting symbol functions also as an indicator of the fundamental category that follows. This function should not be taken away from it. This long-range view was accepted as the starting point.

62 Search for a New Connecting Symbol

Then began the search for a new connecting symbol. In addition to the four punctuation marks ", ;:. " two other digits are already in use as connecting symbols. They are 0 and "-" as connecting symbols for phase and superimposed isolate respectively. The single inverted comma (') was first thought of. It was felt it may cause difficulty in case of slight carelessness in writing. Then, the mark for the quotation starter (") was hit upon as a suitable digit for use as the additional connecting symbol. This has been already brought into use by UDC as the connecting symbol for time facet. UDC enclosed the time isolate number between the mark for the start of quotation and the mark for the end of quotation. This is not necessary in CC. It is sufficient to use only the mark for the start of quotation just in front of time isolate number. However, in print (") looked far too dominant. Therefore, we had to go back to ('). It is proposed to use this as the connecting symbol for Time [E5].

63 The Ordinal Value of Quote Mark

The ordinal value of quote mark (') was easily determined. By postulate, the fundamental category time is at the bottom of the scale of concreteness of (PMEST). It is therefore necessary that its connecting symbol should have the least binding power [O2]. Thus the position of the quote mark in the ascending sequence of the connecting symbols will be as shown below:

0 ' . : ; , -

It is proposed to implement this decision in ed 7(1962) of CC. The last column in the table in section 5 shows how the adoption of (') as the connecting symbol for time implements in the notational plane what is determined by the idea plane as the helpful sequence of the subjects.

7 IMPERSONATION BY SPACE AS PERSONALITY

70 Preliminary

In the main classes "History" and "Law", the first personality facet is the Community. And the isolate number for a Community is got, generally, by the Geographical Device. In this case, Space is said to impersonate as Personality. This means that the apparent geographical isolate number should be treated as a personality isolate number. Therefore, its connecting symbol should be (,) and not (.) This is hidden in the case of the first level community number as its connecting symbol need not be written. But it is necessary to remember this when the community number consists of two levels of isolate numbers. For example, if the community is that of "the urban areas of the Madras (State)" the community number should be written as 4411, 3 and not as 4411. 3. This is assumed in what follows.

71 Subjects for Consideration

Let us next consider the following class numbers as constructed by ed 6(1960) and the proposed ed 7(1962) of CC:-

Table 8

	Subject	Ed 6(1960)	Ed 7(1962)
1	Legislature of Madras (State) in 1961	V4411, 3.N60	V4411, 3'N60
2	History of the Localities of Madras (State) in 1960	V4411, 3.N60	V4411, 9A'N60
3	Councils of the Local Bodies of Madras (State) in 1960	V4411, 3, 3.N60	V4411, 9A, 3'N60
4	History of Madras (City) in 1960	V4411, 3M.N60	V4411, M'N60
5	Council of the Corporation of the Madras City in 1960	V4411, 3M, 3.N60	V4411, M, 3'N60

72 Homonym in Ed 6(1960)

The class numbers for subjects 1 and 2 are the same in Ed 6(1960). As stated in sec 17, a homonym is fatal in a classificatory language. The homonym is caused in this case by failure to take cognisance of a subject like "History of Localities" or "History of a Particular Locality" and the "Organs of its Local Body" turning up. Now, it is realised that the Government of a country will have as isolates in second level personality facet, its own organs such as Head, Executive, Legislature, and so on. At the same time, the Local Body of a city, town, or district will also have its own organs. A district is usually a regional division of a country and therefore, it gets individualised by the sharpening of the isolate in the first level personality facet itself. But it is not so with a city or a town. Other considerations make it helpful to get it individualised at the second level personality. Thus two different sets of isolates arise at the second level when the isolate in the first level personality facet is a country or a constituent state. Further, when the isolate at the second level is a city or a town, the organs of its Local Body can appear as isolates in the third level personality facet.

73 Solution by Telescoping of Facets

We have become familiar with this phenomenon; and we have found that the Method of Telescoping Facets meets the situation [P2;T1]. In this method, we telescope two or more facets into an apparently single facet in the schedule. Such a telescoping exploits the formation of zones and sectors in an array as a result of the use of Mixed Notation. Till now we have had experience only with the telescoping of personality facets of successive lvels within one and the same round. In this telescoping, the Wall-Picture-Principle [E3] is used to decide the sequence of the different personality facets. The earliest possible level of facet is accommodated in one of the latest sectors -- either the last sector in Zone 3, or even in a sector in Zone 4, if the number of possible facets to be telescoped warrants it. The successive later levels are accommodated in the appropriate earlier sectors The oft-recurring last level is accommodated in Zone2. This has resulted in considerable economy in the length of class numbers and at the same time in the retention of the capacity to accommodate several levels of facet in conformity to the Wall-Picture Principle [E3] and the Whole-Organ Principle [E4].

74 A Fault in the Schedule

While applying the Telescoping Device, a fault was discovered in the enumeration of the isolates in the second level space facets. As already stated in earlier sections, these isolates are called Featured Spaces. In fact most of the isolates in this facet are physiographical features, as the schedule shows. Here is an extract from the schedule:

Table 9

	Isolate	Ed 6(1960)
1	Land (Geographic)	1
2	Subterranean	11
3	Surface	12
4	Desert	121
5	Cultivated	125
6	In relation to sea	13
7	Coastland	131
8	Cape	133
9	Delta	137
10	Inland	14
11	Valley	16
12	Mountain	2
13	City, town, village (Population cluster)	3
14	Water (Hydrosphere)	5
15	In relation to land (Sea water)	53
16	High sea	535
17	Land-sea	536
18	Lake (Fresh water)	54

19	River	6
20	Atmosphere	8

It is easily seen that all the items but 13 "City etc (population cluster)" are truly physical features. But 13 is of a different kind. It is is unhelpful to provide a place for it among the conventional physical features.

.75 Removal of the Fault in Ed 7(1962)

This fault is best removed by accommodating the "Population Cluster" outside Zone 2 which is occupied by conventional physical features. Zone 1 or Zone 3 should be thought of. It is here that the need for telescoping mentioned in sec 73 helps us to choose between Zone 1 and Zone 3. By the Wall-Picture-Principle [E3], the facet made of a population cluster -- that is, a city or a town or a village Local Body -- should precede the organ facet of the Local Body. In other words the population cluster should form an earlier level personality facet and any of its organs a later level personality facet. Then, the telescoped schedule for second level personality should be

1 Head
2 Executive
3 Council
4 Party
6 Committees
8 Civil service
9A Population cluster
A to Z Individual Localities by Alphabetical Device.

As a result, the schedule for Second Level Space should be

1 Lands (Geosphere)
....
12 Surface
....
16 Valley
2 Mountain
5 Water (Hydrosphere)
....
8 Atmosphere
(Telescoping Point: Earlier Level)
9A Population clusters
9B Cities
9C Super-cites
9F Medium cities
9J Small cities
9M Towns
9P Villages
9T Hamlets
(Telescoping Point: Earlier Level)
A to Z Individual Localities by Alphabetical Device.

It is proposed to incorporate these ideas in ed 7(1962) of CC.

8 WORK TO BE DONE ON TIME FACETS

The provision of a separate connecting symbol for the fundamental category Time has removed a fault disclosed by the Efficiency Table in the first order arrays of time and space isolates. Here is the efficiency table:

Table 10

Zone	Time	Space
1	Fallow	Fallow
2	Fallow	Continents and Oceans
3	Public Time	Fallow

81 Space Zones

The cells "2-Time" and "3-Space" have to be kept fallow if the same connecting symbol is used for time as well as space. But, with the use of different connecting symbols, the fallow cells can be occupied. Section 75 shows how the cell "3-Space" is brought into use. Use should be found for Zone 1. Zone 1 may perhaps be given to isolates made of administrative divisions as distinct from regional divisions and from divisions based on physical features, such as mountains and rivers.

82 Time Zones

A difficulty was experienced previously when designing the schedule for the Second Level Time Facet or Featured Time as it is called. This schedule and the schedule of the units of time for private time had to be made to share Zone 1 in common. Accordingly a to n were assigned to units of time and p to z were assigned to featured time [P3]. This had a cramping effect on both the schedules, apart from its being revolting to the idea plane. Now, we can release the whole of Zone 1 to the schedule of units of time and accommodate the schedule of featured time in Zone 2 and in the penultimate sector of Zone 3. Thus, the schedules of the facet of units of time and the facet of featured time may be telescoped with the schedule of public time.

83 Work for the Future

The details of all these possibilities should be worked out in the immediate future.

9 BIBLIOGRAPHY

Note 1: The author of each of the documents cited is S R Ranganathan.

Note 2: The first column gives the reference number occurring in the text. The second column gives the number of the section of the text, where the reference number occurs. The third column gives the reference with its locus in the case of articles.

C1	Sec 4	Common isolate. (Depth classification 3. An lib sci; 1;1954;75-80;sec 416-434).
E1	Sec 22	Elements of library classification; ed 3;1961;sec H12
E2	Sec 22	ibid; ed 2; 1960; p 76
E3	Sec 73;75	ibid; ed 3; 1961; sec N32.
E4	Sec 73	ibid; sec N35.
E5	Sec 62	ibid; sec H12
L1	Sec 21	Library classification:Fundamentals and procedure;1944; Sec 514.
O1	Sec 56	Optional facet in classification 1. (An Ind Lib Assn being Annals part of Abgila;1;1950; 35;sec 12).
O2	Sec 63	ibid 1;1950;36;sec 23.
O3	Sec 35	ibid;2;1952;136;sec 5755-5756. ibid 4. ibid 1;1950;97-107; sec 45 to 4563.
O4	Sec 4	ibid; being Report 2 to FID/CA.
P1	Sec 14; 52;54	Prolegomena to library classification; ed 2;1957;sec 151.
P2	Sec 41	ibid;sec 3522.
P3	Sec 73	ibid; sec 367.
P4	Sec 8	ibid; sec 45332 and 4534.
S1	Sec 41	Space isolate. Common isolates in documentation work. 4. Rev doc;24;1957;25-26;sec 5-56.
T1	Sec 73	Telescoping of facets and mixed notation. Rev doc;27;1960; 154-156.
T2	Sec 8	Time isolate. Common isolates in documentation work. 4. Rev doc;23;1956;75-76;sec 5-51.

Paper J

CLASSIFICATORY TERMS

TOWER OF BABEL

S R RANGANATHAN & V P VIJ

The preliminary terms with which the discipline of classification starts -- the term 'Classification' itself, the term 'Schedule of classification' and the term 'Classifying' -- and the ideas denoted by them are studied comparatively as they obtain in the writings of Ranganathan, Sayers and Bliss. They all agree in the idea plane. But they differ widely in the verbal plane causing difficulties to students and confusion in communication. The attempt of the Indian Standards Institution to establish a standard glossary of classification terms is welcomed.

Abbreviations Used

BC	BLISS (H E). Bibliographic classification, ed 2, V 1-2, 1952.
Cl and Comm	RANGANATHAN (S R). Classification and communication, 1951.
Manual	SAYERS (W C Berwick). Manual of classification for librarians and bibliographers, ed 3, 1955.
Prol	RANGANATHAN (S R). Prolegomena to library classification, ed 2, 1957.

1 TERMS AND IDEAS

Ser No	Term	Ranganathan	Sayers	Bliss
01	EXISTENT	Undefined, assumed term	Not used	Not used
02	INDIVIDUAL	Not used	Not used	Undefined assumed term
1	ENTITY	Any existent, concrete or conceptual - that is, a thing or an idea	Not used	Not used

---

V P Vij is the librarian of the Indian Standards Institution.

2	AGGREGATE (of entities)	Undefined, assumed term	Not used	Undefined, assumed term
3	GROUP	Any sub-aggregate of the entities, formed by sorting the entities of a universe into sub-aggregates on the basis of a preferred characteristic, putting like entities into the same sub-aggregate and the unlike entities into other different appropriate sub-aggregates	Undefined, assumed term	Aggregates are composites of individuals; it is selective, localized and temporary; it is not definite, nor a totality as a 'Class' is; but groups may be innumerable.
4	CLASS	Ranked group	Group of concepts or of things assembled by some likeness which unifies them	Set of all the things that are alike in the essentials, characteristics, properties and relations, by which the class is defined; it is correlative to a concept, or class concept, and to the class name

11 Entity

The word 'Entity' of Ranganathan is equivalent to the word 'Individual' of Bliss. In Ranganathan 'Entity' is a defined term, its definition leans on 'Existent' used as undefined assumed term. Sayers has no equivalent word. Therefore he uses the phrase 'Concepts or Things' in its place.

12 Aggregate

The word 'Aggregate' of Ranganathan is equivalent to the word 'Group' of Bliss. Sayers uses the word 'Group' in the sense of the word 'Aggregate' or Sub-Aggregate', though he does not define it explicitly.

13 Group

The word 'Group' of Ranganathan is equivalent to the word 'Class' of Bliss as well as of Sayers. For their definition of 'Class' brings out only fact that all the entities in a class have likeness with reference to the characteristic chosen. It does not imply the position of the class in an arrangement or sequence of classes, as the epithet 'Ranked' in Ranganathan's definition denotes.

14 Class

The word 'Class' as defined by Ranganathan has no distinctive equivalent term in Sayers or Bliss. The word 'Class' is used by them indifferently both in the sense of the word 'Group' and in the sense of the word 'Class' as defined and distinguished by Ranganathan. In other words, the word 'Class' is a homonym in the terminology of Sayers and Bliss. A homonym always makes communication difficult. It should be avoided, particularly in a scientific discipline.

2 NEED FOR STANDARDIZATION

This difference in the use of terms, pertaining to one and the same discipline, viz Classification, is bound to puzzle students beginning to learn the subject. It is also bound to make communication ineffective even among veterans. It is necessary, and it should be possible, to have a standard terminology. Section 1 discloses that the same concepts are handled by all the three authors though with different terms. So long as there is no difference as regards to concepts — that is there is no difference in the idea plane — the difference in the verbal plane can be removed. This is the purpose of establishing a Standard Glossary of Terms. It is, therefore, a real help that the Documentation Committee of the Indian Standards Institution has set itself on the task of establishing a Standard Glossary For Classification Terms.

3 'CLASSIFICATION' AND ITS VARIANT USES

The term 'Classification' is used in different senses by the three authors being studied in this paper.

31 Ranganathan

311 Classification (First Sense-Primitive Use): Division of a universe into a multitude of groups on the basis of a system of characteristics (Cl and Comm S 11). The word 'Division' is used by Ranganathan to denote 'Classification' in this sense (Prol S 121).

312 Classification (Second Sense - Common Use): Classification in the first sense and the arrangement of the resulting groups in a preferred sequence. The groups then become classes. (Cl and Comm S 12). The word 'Assortment' is used by Ranganathan to denote 'Classification' in this sense (Prol S 131).

313 Classification (Third Sense - Library Classification):. Classification in the second sense and representation of the resulting classes by ordinal numbers (Cl and Comm S 13). The term 'Classification' is reserved by Ranganathan for use in this sense only.

314 Scheme of Classes: Statement showing the filiatory sequence of the classes — that is, pseudo entities — alone that arise in the course of the complete assortment of an amplified universe, ignoring the entities themselves (Prol S 166). (The terms "Filiatory Sequence", "Complete Assortment", and "Amplified Universe" are defined prior to arriving at this definition. The term "Pseudo-Entity" also is introduced and defined as a convenience).

315 Scheme of Classification: Scheme of classes fitted with terminology and notation (Prol S 171).

32 Sayers

321 Classification: The intellectual process by which our mental concepts or pictures of things are recognized to have likeness or unity and by this likeness or unity, are set in relation to one another (Manual S 48(a)). This is the same as the second sense in which this word is used by Ranganathan. In other words, it is used as equivalent to the word 'Assortment'.

322 Scheme of Classification: Assembly of classes in a systematic order (Manual S 118(5)). This is equivalent to Ranganathan's 'Scheme of Classes'.

33 Bliss

Classification: A system of classes in relation or order, with regard to some principle of characterisation or some purpose (BC 106,(15)). This is equivalent to Ranganathan's 'Scheme of Classes' and the 'Scheme of Classification' of Sayers.

4 NEED FOR STANDARDISATION

Here again the difference in the use of terms does perplex one and makes communication difficult. There should be an agreed standard of terminology. Homonyms should be totally removed. This is done in the terminology of Ranganathan by introducing five different basic terms to denote the five ideas involved. The terms are:

1 Division
2 Assortment

3 Classification
4 Scheme of Classes
5 Scheme of Classification

5 SCHEDULE OF CLASSIFICATION

51 Ranganathan

Schedule of Classification: Dictionary giving the meaning of each class number or ordinal name in a natural language or the jargon of a profession or a trade (Prol S 1284).

It is not clear how a 'Schedule of Classification whose definition is reproduced in this section differs from a 'Scheme of Classification', whose definition is reproduced in Section 315. They are obviously synonymous. Is it not desirable to avoid synonym in the terminology of a scientific discipline? Or does the term "Schedule of Classification" imply either

i) Approach from a number or ordinal name to name in natural language; or

ii) Functional or operative aspect of 'Scheme of Classification; or

iii) Both (i) and (ii)?

If so, Ranganathan should have brought out such an intention behind the use of two apparantly synonymous terms.

52 Sayers

Classification Scheme: The written or printed schedule of terms which represents a system of classification (Manual 118 C).

This is perhaps equivalent to Ranganathan's 'Schedule of Classification'. It is also not clear how Sayers differentiates between 'Classification Scheme' whose definition is reproduced in this section and 'Scheme of Classification' whose definition is reproduced in section 322.

53 Bliss

Schedule of Classification: Schedule which is structural in showing the order and relations of subject in subordination, coordination and collocation, and functional in correlating the notation to the classification, in maintaining the order of the actual classification, and in locating the subject in the process of classifying (BC P 107(29)).

531 This definition is in substance the same as those of Ranganathan and Sayers, though Sayers uses a different term.

532 Bliss's words "structural.... Collocation" emphasise a canon - the Canon of Filiatory Sequence - that a scheme of Classification should satisfy if it is to be of help. However, it is not necessary to load the definition of a term with this idea. It destroys the unity of the definition. And further, this is not the only canon to be satisfied.

533 Similarly, the words "in maintaining... classifying" are also not quite essential in a definition. They only denote uses of second and further remove of a schedule of classification.

534 On the other hand, the words "in correlating the notation to the classification" denote the immediate or primary use. They are in place in a definition. These words are totally equivalent to the words used in Ranganathan's definition of the term.

6 CLASSIFYING

61 Ranganathan

Classifying: Assigning an entity of a universe to the appropriate class in the scheme of classification adopted, by ascertaining the way in which each of the characteristics implied by the scheme is shared by it, and assigning the appropriate class number to it (Prol S 1287).

62 Sayers

621 Classifying: The act of arranging actual things, such as geological specimens, plants or books, so that they represent the abstract arrangement (Manual S 118(b)).

622 Classing: The act of placing things or books in their appropriate places in the classification scheme (Manual S 118(d)).

623 The term 'Classing' of Sayers is the equivalent of the term 'Classifying' of Ranganathan. His term 'Classifying' is equivalent to the term 'Assortment' of Ranganathan mentioned in section 312. Its definition is "Process of the division of the entities of a universe into groups plus that of arranging the groups in a definite sequence".

624 Perhaps in the world of librarians what Sayers calls 'Classifying' can be denoted by the term 'Arranging' in preferred sequence. If so, the term 'Classing' can be altogether omitted. There is indeed a trend to use the term 'Classifying' alone in the place of 'Classing'.

63 Bliss

631 Classifying: Bringing individuals to form a class really or mentally, that is conceptually; also in the secondary sense of arranging classes in a classification (BC P 106 (14)).

632 Classing: Assigning or referring a thing or an individual to a class in classification (BC P (16)).

633 Bliss also distinguishes between 'Classifying' and 'Classing' as Sayers does. All the remarks made in section 62 are applicable here also.

7 SEQUENCE vs ORDER

The word 'Order' is an over worked word. Within the field of Library Science, it has several meanings as in phrases "Office-Order", "Book Order", "Order of a Class" and "Helpful Order". In a scientific discipline, it is desirable to eliminate or at least minimise the incidence of homonyms. Of the uses of the term 'Order in the four phrases mentioned above, context will easily separate out the first into the sub-field of Office Management, the second into the sub-field of Book Acquisition and the others into the sub-field of Classification. Confusion may not arise seriously on account of these three sub-fields. But, confusion will arise on account of the two different uses of the term "Order" within the Discipline of Classification itself. During the first 20 years of Ranganathan's teaching the subject, one of us – Ranganathan, used to find the strain caused by this homonymous term on the students. This was not expressed by the students. But as a teacher, Ranganathan could sense it. About 10 years ago, Ranganathan decided to resolve the homonym by using the word "Sequence" to denote "Order" in the fourth of contexts mentioned at the beginning of this section, and to reserve the term "Order" only for use in the third context. One is able to see the great relief it gives to the teacher and the taught alike. It also removes a subtle hurdle arising in discussions and expositions in general. Though conceding the advantage of this theoretically, the older people involuntarily use the term "Order" in practice. This should be got over by a conscious effort by teachers and writers. In this way, at least the next generation should be saved from the effect of this homonym within the relatively small area of the discipline of classification.

Paper K

SAYERS AND DONKER DUYVIS

THEORY AND MAINTENANCE OF LIBRARY CLASSIFICATION

S R RANGANATHAN

Dwells upon the careers of two great classificationists of twentieth century - Sayers and Donker Duyvis. Gives their achievements as the grammarian of classificatory language and as the pioneer in documentation respectively. Illustrates the influences of Sayers and Donker Duyvis on Colon classification and particularly on the three planes of classificatory work. Narrates the immense benefits to library science due to personal contacts of devoted workers in the field.

Abbreviations used

BC = Bibliographic classification
CC = Colon classification
DC = Decimal classification
FID = International Federation for Documentation
LC = Library of Congress classification
SC = Subject classification
UDC = Universal Decimal Classification

W C Berwick Sayers

B 23 December 1881
D 7 October 1960

Frits Donker Duyvis

B 30 April 1894
D 9 July 1961

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1 CHRONICLE

The world has lost two veterans in library classification, within the last one year. W C Berwick Sayers died on 7 October 1960; and he was born on 23 December 1881. Frits Donker Duyvis died on 9 July 1961; and he was born on 30 April 1894. Sayers belonged to England; and he was born at Mitcham. Donker Duyvis belonged to Holland; but he was born at Samarang, Java. Sayers completed his school education in Bournemouth; he did not enter any university; his interest was in the humanities. Donker Duyvis studied Chemical Engineering at Delft University; his interest was in applied science. Sayers began his career as early as his fifteenth year by joining the staff of Bournemouth Public Library in 1896; he retired in 1947 after being the Chief Librarian of Croydon Public Libraries; he had worked in that library as Deputy Librarian from 1904 to 1915 when he succeeded Stanly Jast as the Chief. Donker Duyvis was for sometime industrial consultant to the Government of Holland; in 1929, he joined the staff of the Dutch Patent Office; and after a long term of service he retired as its Vice-president in 1958. Both had suffered during the war years; but naturally the suffering had been more severe with Donker Duyvis.

2 LITERARY CONTRIBUTION

21 Sayers

Sayers wielded a fluent pen. Apart from his work on War archives of Croydon and a few contributions to Belles-lettres, most of his books and articles were on Library Science. Those on library classification are the most widely read. His Introduction to classification went through nine editions between 1918 and 1958. It has been the most popular book on the subject throughout this period. It has been used practically in all the countries where English is understood. His Manual of classification was slightly heavier. It appeared first in 1927. The current edition is the third, and was brought out in 1959. He was a frequent contributor to the British periodicals on Library Science Most of these are on classification. Some are biographical.

22 Donker Duyvis

The literary contributions of Donker Duyvis were only in the form of articles. The Rev doc (21, 1954, 13-15 and 23, 1956, 144-46) gives a list of his contributions. To this should be added his papers of the three later years. The earliest belonged to 1920. It had the title Documentatie and was published in the Chemisch Weekblad (1920, 484-5). The latest paper came out in 1960 with the title Document reproduction services; their efficient organisation and management (Unesco Bull Libraries 14, 1960, 241-59). Perhaps the latest of his ideas were embodied in his paper on Standardisation as a tool of management in the Lib trends (2, 1954, 410-27). He had also devoted thought to the problem of abstracting.

3 THEORY OF LIBRARY CLASSIFICATION

31 Sayers as the First Grammarian

The chief service of Sayers to classification centres round the development of its theory. His first contribution was the Canons of classification. This came out in 1915. It has been taken to progressive fullness through his other two well-known books. Sayers was the first person to build up an elaborate, consistent, and fairly complete grammar of the classificatory language. This he built up first in his classes and later embodied in his books. His poineer teaching of the theory of library classification was truly inspiring. He gave a profound and significant content to the routine work of picking up class numbers from the relative index of DC schedules. It made his students look upon classification as discipline with a charm and a challenge of its own. In my case, his first three lectures were sufficient to make me embrace the subject. This happened in 1924. I cannot still escape from its grip. It is a welcome grip. It is a life-giving grip. It has given me delight during all these thirty seven years. Every year opens out new vistas for fresh pursuit. I call Sayers the first grammarian of the classificatory language. But he had none of the phlegmatic bigotry usually associated with grammarians. He heartily accepted, summarised, evaluated, propagated, and even embodied in his own books the later grammars of classificatory language written by others. This was the case with the canons formulated by Bliss. So also it was with the canons stated in my Prolegomena to library classification (1937). I met Sayers in 1948 after a long interval of 23 years. He took me to Croydon. We were sitting in one of the public parks. He referred to my Classification and international documentation published by FID just a month earlier. He said in effect, "I read only a few sentences at a time. Your writing is so condensed. I have to think over each sentence for a long time. Of course, you have made your subject a science. You have also developed the precise terminology needed in the exposition of a new discipline. Of course, it will take some practice for others to pick up and handle your terminology. I have done it and it has paid me." How narrow, impatient, and allergic are some and even deny the need for a special terminology. Here is a typical example from Miss Barbara Kyle. "But, as usual, he (Ranganathan) alienates all readers, but his existing disciples, by assuming their acceptance of his terminology. How even, if you understand this, would you translate it in French? This, within the FID, seems a fair and valid question". What an insularity unworthy of any scientist and certainly of one brought up by in the tradition of Sayers! When I met him again two months later, he said, " I have now finished reading your paper. I enjoyed it. I could never imagine that so much of new thought could be erected with what little I taught you as the foundation." Sayers was then 68. He maintained resilience of mind even in that advanced age. His remarks on my opening address on "Classification as a discipline" at the Dorking Conference in May 1957, are a demonstration of his superb scientific attitude, openness of mind and agility of intellect, maintained by him even when he was 77. He said, "Classification is a practical instrument bringing together in reliable order the fluid field of knowledge. Hence it has no perennial life but requires constant reconstruction, constant reference to principles. We need to face the fact of change and to work what had been done in the past into the fabric of to-day".

32 Bliss and Sayers

Sayers was a great admirer of Henry Evelyn Bliss—the author of two well known books of organisation of knowledge. He not only accepted the more elaborate grammar of classification of Bliss, but also extended his own grammar so as to cover the new development in the classificatory language brought into vogue by the Bibliographic Classification of Bliss. In fact, perhaps Sayers was responsible more than anyone else to interpret to the world the outstanding contribution of Bliss—both as a grammarian of classification and as a classificationist responsible for a new scheme of classification of our own days—the BC. I remember the real warmth and admiration with which he used to tell me about the persistent achievements of Bliss through nearly half a century.

33 CC and Sayers

331 Genesis of CC

Bliss was senior to Sayers. But the affection of Sayers to his juniors was no less ardent. It was more than ardent. It was a source of stimulus. My mind goes back to November 1924. One afternoon we were sitting in the cafeteria of the University College, London. Two hours slipped away without our knowing. What kept us so absorbed? It was the great enthusiasm of Sayers for understanding the struggle of a novice in the profession. It was his great readiness and sympathy to entertain, accept, and discuss with discernment and sympathy, even the chirpings of a novice in the field of classification. There was only a nebulus idea working in the mind of the novice at that time. Neither the name Colon Classification nor the concept of Facet had taken shape at that time. The name was adopted only five years later. Facet-concept was hit upon only twenty years later. The idea of looking upon a system of class numbers as an artificial language of ordinal numbers was then unknown to either of us. In fact, none of the terminology of classification now widely current was then available for communication. One can imagine how arduous interchange of ideas on CC should have been in that discussion. Communication had to be largely through diagrams and examples. The very struggle and the failure to communicate in conventional language proved to be the chief means of communication. I realised only then the significance of the phrase "darkness visible" read by me as mere words in doing Milton's Paradise lost in the first month of my university course in April 1909. It also made me realise the meaning of the phrase "eloquence of silence" found in a verse describing the communication, fifteen centuries ago, of the boy Sankara to his aged pupils. For neither Sayers nor myself could then express our thought to each other in plain English. Silence interspersed with diagrams and backed by changes in facial expression and in the glow of the eyes was the only means of communication on that day. And it proved to be an effective means. We understood each other. Satisfaction flowed to me. I do not know what flowed to Sayers. I remember the sympathy, the stimulus, and the good will flowing to me from Sayers.

332 Wholesome Warning

I also got a wholesome warning from Sayers. He said in effect, "It may be all smooth sailing at the earlier levels. But, difficulties will appear at deeper levels. We cannot now anticipate what they will be ". This may look like a trivial warning for a classificationist of to-day. But forty years ago, Sayers was perhaps one of the very few, if not the only person, who could have sensed this. Even to-day, it is not realised by many a hasty classifier venturing into the field of a classificationist and attempting to design a new scheme of classification — general or special.

333 Encouraging Help

Perhaps any other person would have suppressed with cynical words the attempt of a novice to design a new scheme of classification on new foundations. But that was not the way of Sayers. On the other hand, he encouraged me to pursue the working of designing the CC. When the scheme appeared in print in 1933, he was the first to write to me with enthusiasm. Bliss was second. Sayers devoted a chapter to an account of CC in the later editions of his Introductions and Manual. I am told that he also began to teach it in his class. He commended the attention of the profession to the new CC in several ways.

334 Brotherly Concern

Sayers showed a brotherly concern in the development of CC. Shortly after its first publication, I received a letter from him inviting my attention to an article in the Modern librarian. He wrote to the effect "The author of the article has sent me a copy of its reprint. Do not be upset by the absurd statements found in it. The author has only betrayed his own ignorance. Probably his motive is one of envy and hatred. When he joined the course here in London, he introduced himself as a student of yours. But his performance in the examination was very poor. We gave him grace marks and passed him for two reasons. He had come a long distance for the course, and he was your student. Do not take his words to heart. Pursue your work with cheerfulness".

335 Welcome Reception

One of the canons of Sayers which had been giving me trouble for several years from the moment I learnt it in his class was that of Hospitality. I had only a vague feeling that there was something nebulous about it. Therefore, it was difficult for me to tell him in 1924 what my difficulty was. He used to hear me on this with sympathy while I was struggling to express my difficulty. But the communication failed every time. It was only in 1936 that the difficulty got not only enunciated clearly but also solved elegantly. The solution was the recognition of hospitality as a double personality. Two kinds of hospitality were recognised. The necessary terminology was established to deal with the problem. It is now realised that the failure of communication in my discussion with Sayers in 1924 was due to lack of appropriate terminology. This failure in verbal plane caused failure in self-communication too. It led even to a worse result. There was confusion in the idea plane too. To use the terminology established in 1936 and used widely now-a-days, the term 'Hospitality' was a homonym. It denoted capacity to accommodate new classes or isolates in one and the same array and again in one and the same chain. The homonym was resolved by denoting the two kinds of hospitality by two different terms viz., Hospitality in Array and Hospitality in Chain respectively. A canon corresponded to each of these kinds of hospitality. The single compound Canon of Hospitality of Sayers was replaced by two canons viz., Canon of Hospitality in Array and Canon of Hospitality in Chain respectively. These findings were embodied in the Prolegomena in 1937. Soon after a copy of the book reached Sayers, he gave them a welcome reception. He wrote in effect, "I now realise what you were struggling to express to me when you were studying in London. This splitting of a single canon into two is a great step forward in the theory of classification."

34 A Handicap of Sayers

As the first grammarian of classificatory language, Sayers had a handicap. This handicap may be described as follows. As shown in my Classification and communication (1951), the term 'Classification' turned out to be a homonym.

341 Classification in the First Sense

In its first and earliest sense, it meant putting all the like entities of a universe into a single group and thereby replacing the single aggregate of entities forming the universe by a number of subaggregates or groups. The result of classification in this primitive sense was the replacement of an aggregate of entities by an aggregate of groups. The term 'aggregate' implies that the groups are thrown into a random sequence. Classification in this sense is made even by children. It had been made even by the early man.

342 Classification in the Second Sense

Gradually man was not satisfied with a random arrangement of the groups arising in the classification of a universe in the first and primitive sense. It was not as serviceable as necessary and possible. The groups came to be arranged in a preferred helpful sequence. Then the term 'classification' was taken to denote the combination of the two processes of dividing the entities of a universe into groups of like entities and of arranging these groups in a definite sequence. This combination of the two processes represents the meaning of the term classification in the second sense.

343 Logic as Wet-Nurse

In due course, one or other of the elements in the bundle of disciplines, traditionally labelled 'Philosophy' in general, seized the study of the mental process of classification in the first and the second senses. A theory of classification was begun and elaborated. An account of this theory came to be included eventually in books on logic. I believe that the inclusion of classification into the discipline of logic was fortuitous. For logic is the discipline concerned with the making of valid inferences either from a set of experiences based on observation and/or experiment or from an initial proposition. In the former case, it is inductive logic. In the latter case, it is deductive logic. The discipline of arrangement cannot form part of logic in either sense. However in the absence of anybody else taking up the development of this discipline, the logician became its wet-nurse.

344 Naturalist as an Enricher

During the last few centuries, the naturalist practised classification extensively. The classification of plant and animal groups was developed elaborately. Natural science borrowed the terminology of logic freely. It did not turn its attention to a pure theory of classification in the first two senses. But its practical achievement was very impressive. It permeated into the general apperceptive mass of the votaries of even other disciplines. This made many persons classification-minded. Enumeration in a systematic sequence, carrying the enumeration down a large number of successive arrays, and basing the enumeration at each stage— that is, at the transition from one array to the next— on a definite characteristic was brought into vogue by the naturalist. He thus became a great benefactor to the discipline of classification.

345 Enumerative Classification

But the theory needed for this enumerative classification did not go outside the range of the theory already established by the logician. Therefore, the naturalist did not make any distinctive addition to the corpus of the theory of classification in the first two senses.

346 Classification in the Third Sense

In the nineteenth century, classification of books began to be seriously practised. It was found helpful to arrange the books on the shelf on the basis of a scheme of knowledge classes. The schemes found in the works of Bacon and of a few later philosophers and scientists were used for the purpose with some modifications. These were still only schemes of classification in the second sense. But the task of restoring the sequence of the books on the shelves from day to day and from hour to hour after the reader took away books from here, there, and everywhere in the sequence almost at random for study, and returned them became too arduous. Finding a helpful, filiatory place for books newly acquired from time to time was no less arduous. Mechanising these tasks became a necessity as the books increased in number, the user too increased in number, and the frequency of call by readers became nearly continuous in each day. The use of ordinal numbers in this mechanisation was hit upon. With the help of decimal fraction notation, DC made the ordinal numbers remarkably versatile in mechanising these tasks. EC, LC, and SC also designed different brands of ordinal numbers for the purpose. This added a new dimension to classification in the second sense. Thus, classification in the third sense came into vogue. Classification in the third sense is classification in the second sense plus representing each of the classes by a distinctive ordinal number belonging to a system of such numbers. By library classification is meant classification in this third sense. Though primarily designed for the arrangement and easy maintenance of the arrangement in the ever-growing and ever-disturbed universe of books, it is adaptable for a similar purpose in respect of a universe of any kind of entities whatever — concrete or conceptual.

35 Sayers and the Idea Plane

The entry of Sayers into the field of the theory of library classification happened at this stage in the evolution of classification. He built on whatever had already been done in the field. Classification still continued to be enumerative. No doubt UDC had introduced a dash of analytico-synthetic element. But it was too slight and too overshadowed by the massiveness of the enumerative element of its DC core. The theory of enumerative classification had been well developed by the logicians in respect of its incidence in the idea plane. Therefore, Sayers accepted it and adapted it with great skill to library classification. He re-stated that theory with an eloquence that had attracted many students. The success of his eloquence had as its concomitant the perpetuation of identifying classification with logic. This fault continues to occur in abundance in the writings of the later generation and in the words uttered in the class room. The fault is being perpetuated with uncanny naivety and even unconsciousness. It goes unnoticed. In fact, the term 'logical arrangement' is used by speakers and writers almost as a slogan without any thought about its sementic content. Because the term is used in that way, the older people feel no difficulty. But a beginner — a student — undergoes a mental strain. The clear thinking of many of them is clouded and even arrested by this unexpressed incommensurability of the words 'logic' and 'arrangement' coupled together so as to make 'logic' apparently qualify 'arrangement'. In spite of this wrong lead, the contribution of Sayers to the theory of classification has been profound to the extent it has gone.

36 Sayers and the Verbal Plane

The distinctive contribution of the naturalists to the theory of classification has been in the verbal plane. They evolved a nomenclature competent to indicate the order of the array to which a class belonged. The evolution of such a nomenclature has led to much progress in classificatory thought. It has also added considerably to its clarity. The chemist, the geologist, the botanist, the agriculturist, the zoologist, and the medical profession have shown the way for the other professions. They have established their respective international organisations on nomenclature. Some of the latest achievements in the verbal plane of the theory of classification have emerged in the field of agriculture. Sayers did not add much to this. However, his canons for terminology form a landmark. But his attempt at building a consistent, dynamic glossary of classificatory terms had been rather casual and unhelpful. This has been demonstrated in an article appearing in this very issue under the title Tower of Babel (Paper J).

37 Sayers and the Notational Plane

But Sayers was the first to build the theory of classification in the notational plane. This is equivalent to saying that he was the first to build a theory of classification in the third sense. As he was the designer of a theory of classification and not a designer of a scheme of classification, his theory was conditioned mostly by the schemes of classification current at the time of his building the theory. They were all mainly enumerative schemes. The theory of Sayers was as good as it can be as an interpretative exploration.

38 Sayers and Analytico-Synthetic Classification

The analytico-synthetic type of classification gained position in the centre of thought only in the fifties of the present century, though CC had appeared as its proto-type as early as the twenties. It was too late for Sayers to rebuild the theory of classification, so as to make it a descriptive formulation of an analytico-synthetic scheme as well. But even in this matter, he did the best possible for a man of his advanced years. For as soon as edition 1 of Prolegomena to library classification, establishing a generalised theory suited to enumerative as well as analytico-synthetic classification appeared, he incorporated some of its theory in the new editions of his own books and also gave an appreciative account of it in the Year's work in librarianship. This is a measure of the remarkable resilience, open-mindedness, and urge to keep his theory of classification abreast of the times. That he was for a dynamic theory rather than a static theory of classification is demonstrated by the following words he used in his preface to edition 2 of Prolegomena (1957):

"It is not within my space to say in what ways it over-rode many of the obstacles to real understanding of the art of analysing and assembling books; that the student will discover by rewarding study of the book itself".

4 UNIVERSAL DECIMAL CLASSIFICATION

41 The First Builders

Donker Duyvis was primarily a classificationist and not a grammarian of classificatory language. Even as a classificationist he did not have full freedom to design a scheme de novo. On the other hand, he had a handicap. For he inherited a scheme. That scheme was the UDC. He inherited it from Henri La Fontaine and Paul Otlet, both of Belgium. They had been joint predecessors in adopting the DC as the core for UDC. They were its first builders.

42 Sponsor

UDC had the IIB (International Institute of Bibliography) as its sponsor. A world accumulation of 12 million documents, consisting of books and articles in periodicals – macro-thought and micro-thought! Annual rate of increase, a hundred thousand books and a million articles! How to keep track of this ever-swelling flood? How to keep every intellectual worker fed exhaustively and expeditiously with just the documents relevant to the work engaging his thought at the moment? To consider this, an International Bibliographical Conference was held in Brussels in 1895. The outcome was the founding of the IIB. The Government of Belgium voted the funds. The Palais Mondial became its home.

43 Genesis

The primary object of the IIB was to maintain in cards an ever-up-to-date universal bibliography of all documents -- books as well as articles. The arrangement of the cards was naturally a formidable task. Minutely classified subject arrangment was rightly hit upon. Then came the search for a scheme of classification. DC was then in its fourth edition (1894). It had already extended to 593 pages. Its pure notation of Arabic numerals appealed to La Fontaine and Otlet. Of course, the hospitality of the decimal fraction notation also should have been an important recommendation. There was then no other scheme as widely used as the DC. And the IIB adopted it. Even in 1895, it began to bring out French versions of DC in easy instalments. In 1924, Donker Duyvis became the secretary of the International Committee for UDC. The first edition of UDC came out with the title Manuel de reporterie bibliographique universelle.

44 Role of Donker Duyvis

The second edition was begun in 1927. It was completed in 1933. In this edition, it carried the name Classification Decimale Universelle. The decisive role played by Donker Duyvis as builder of UDC will be seen if we remember that he became Secretary-General of the I I B in 1924. Thus, the building of UDC was all primarily his enterprise. During the long stretch of 35 years he had applied himself assiduously to promote the continuous expansion of UDC and its extensive use all through the world. He had promoted several committees of subject-specialists to expand the schedules in their respective subjects. At present complete editions in six languages have started publication. About 40 abridged editions exist in fifteen languages. The second edition had the full impress of Donker Duyvis in the natural sciences. The social sciences and the humanities were left to the care of La Fontaine and Otlet. They merely reproduced the schedules of the first edition. But in the schedules of the natural sciences, Donker Duyvis made drastic changes. In the later editions he made changes in the schedules of the social sciences also. According to his own estimate, the third edition had retained intact only a third of the first edition. That is a measure of Donker Duyvis as a classificationist. On the organisational side, he had been responsible for the laying down of a strict procedure for the further development of UDC. The PE notes is an important stage in this procedure. Between December 1956 and August 1958 Donker Duyvis wrote his last will and testament, as it were, in regard to the future of the UDC which was his life's work. It came out in the form of six articles in the Review of documentation with the title Policy of revision of the Universal Decimal Classification.

45 Donker Duyvis and the Idea Plane

Donker Duyvis had clear notions in the idea plane — sans sentiment of any kind. For in the very first article on policy he wrote, "It is obvious that the superstructure of the UDC is out of date and the general concepts as worked out by Melvil Dewey cannot be left untouched. Nevertheless I might stress that an improvement of the general structure of the classification should be made by persons who see the classification as a real universal survey of the totality of objects of human knowledge and activity". In the same article he wrote with the catholicity of a true classificationist. "The UDC has been preponderantly "western" in outlook from the beginning in spite of the fact that its two creators La Fontaine and Otlet were "universalists" or "encyclopaedists" par excellence. This means for instance that

Christian religion is considered as the only one which is to be taken seriously, whereas Hinduism, Buddhism, Taoism, Shintoism, Islam, etc., are dealt with as a kind of superstition. But religion is not the only field in which UDC shows too much its western origin. The same appears in regard to eastern philosophy which is not adequately treated in the section on philosophy, based only on western and classic doctrines. Even the demarcation between philosophy and religion is far more difficult with regard to eastern and esoteric doctrines than to western concepts. The social sciences in UDC hardly take into account the structure outside the western countries. Thus the chapter on economics takes no account of the various forms of communism as taught in the countries "behind the iron curtain", nor of eastern forms of social structure. In UDC only Roman law has been dealt with adequately. Germanic law is poorly treated and the various eastern legal systems which correspond with eastern concepts of ethics and morals are not represented at all in UDC". In the sixth article Donker Duyvis referred to my concept of "depth classification" as a "further evolution of multi-dimensional classification". At the end of the article, he gave a chart picturing the features resulting from the analysis of a document in the idea plane as in step 3 of my scheme for practical classification. A major contribution of Donker Duyvis as a classificationist is the schedule of analytical sub-divisions in many basic classes.

46 Donker Duyvis and the Verbal Plane

The catholicity of Donker Duyvis was as remarkable in the verbal plane as in the idea plane. In his paper on the Polyglot approach to information in international documentation (Rev doc 24, 1957, 105-106), he wrote "Although more than half of all scientific publications appear in English, more and more the less common languages are being used in the pure and applied sciences. Clearly it is not possible to guide artificially the linguistic streams of scientific publications into one single current, not even in three (English, French, and German)as was the case before the war. Some five languages would suffice for the time being and before long an oriental language will be necessary in addition. As a more or less objective choice I would suggest languages which are spoken as national ones in at least three countries. These are (in alphabetical order)

English in various countries of the British Commonwealth and in the USA,

French in Belgium, France (and overseas countries) and Switzerland,

German in Austria, Germany, and Switzerland,

Russian in the countries of the Soviet Union,

Spanish in most countries of Latin America, and in Spain".

461 The Canons

The substance of my Canon of Context and Canon of Enumeration is well sensed by Donker Duyvis in his Polyglot edition of UDC (Rev doc 26, 1959, 75-77). But this sense of his does not seem to have led him to depend on these canons and make the terms in the schedules of UDC sufficiently trim and one-worded to make them fit for use in subject headings derived from the class number by Chain Procedure.

47 Donker Duyvis and the Notational Plane

Donker Duyvis had always felt concerned with the defects in the notational plane, taken over by UDC from DC. In his policy paper 2, he says, "When the second edition of UDC was prepared it was one of the preoccupations of (his) to try and keep the classification away from the famous bed of Procrustes (the tendency to stretch a section of classification over ten subdivisions). In order to make numbers as short as possible, Melvil Dewey for subordinate notations used numbers which from a notational point of view were of equal rank". To put it in my terminology, DC telescopes arrays rather too freely without forseeing the need arising in due course for the digits of both the arrays having to be used.

471 Starvation Principle

Donker Duyvis formulated the Starvation Principle for the notational plane. According to this, if an isolate number or an array-isolate number is rendered unusable in its original sense for want of literary warrant for the isolate idea or the array-isolate idea concerned, the number is to be kept unused for a certain period — say ten years — and then used to represent some other idea. This principle however involves overlooking the Canons for Filiatory Sequence/ and the Canon for Consistent Sequence.

5 SAYERS: INFLUENCE AS A TEACHER

Perhaps, the most productive impact of Sayers on the course of the evolution of library science and service should be traced to his work as a teacher. He was not a teacher by profession. He had not taken a formal course of training in the art and science of teaching. But nature had endowed him with the ability to teach effectively. He had an inborn knowledge of the method of teaching. He had the enthusiasm to radiate his ideas to the point of infection. He had the eloquence to communicate his ideas with convincing clarity. He had the command of language to entertain without the incidence of boredom. He had the conviction of a missionary. His method of teaching was all his own. Indeed, his teaching often brought to my mind Vatsyana's verse, "No rules, no set procedure for one sailing on the crest of insight and enthusiasm".

51 Method of Teaching

Though successful with his own innate method of teaching, Sayers did not have a closed mind about the way to teach. Many a night, I used to walk with him to the Warren Street Tube Station after the class ended at 21 hours. On most of these days, he would engage me in a retrospective review of his performance in the class. He would tell me in effect "You are a trained teacher. You have been a full-timed teacher for seven years. Was I right to-day in the way I taught such and such a point?" The tone of his asking this question was not one that meant that I should say "yes". On the contrary, it was tuned to a pitch of sincerity that often compelled me to suggest alternative ways in which it might have been better. He accepted most of such suggestions. He would accept some of them straight away. Others he would accept only after a discussion of the why of them on the basis of the fundamental psychological principles of teaching.

52 Defect due to Mass Teaching

Evidently Sayers had been subjected to mass teaching in his school days. Perhaps the principle of individual instruction was not known in those days. It may be that a stray born-teacher practised it here or there. It has to be remembered that a formal theory of individual instruction had yet to be consciously developed by John Dewey. Indeed, Dewey's pioneer work on individual instruction — School and society — came out only in 1896, — the year in which Sayers left school. Further, this remarkable book took more than a generation to permeate even among the teaching profession. It is no wonder then that Sayers continued only the mass method of teaching. Moreover, most of the students had already worked in libraries and had accepted without question schedules of DC and the way they were used in practice. Thus there was no challenge from the students. They accepted their minds had been sealed. That was due also to the fact that the library profession had not yet begun to attract intellectuals of a high order during the days of his teaching. Indeed, there were few university men in his classes of the earliest years. This accounts for the delay in the theory of classification being seized and cultivated so as to yield new results. In spite of this social factor, Sayers was remarkably successful as a teacher of classification. If he could have practised individual teaching or if he were a full-timed teacher with opportunity for tutorial work and intimate discussion with small student groups, the theory of classification would certainly have progressed more widely and more rapidly; for he had remarkable innate powers for tutorial work and group discussion and even individual discussion. In my year, perhaps I was the only one who had spent the longest number of hours with him in individual discussion. I have enjoyed his ability in this method of teaching. On occasions, his informal discussion with me — for it was never in the class room or in the college; it was mostly in our walks — used to remind me of the description between the teacher and the pupil found in the pen pictures in the Upanishads.

6 DONKER DUYVIS AND HIS OTHER AREAS OF SERVICE

61 Standardisation

As an engineer in charge of patents, Donker Duyvis was naturally highly appreciative of the benefits of standardisation. Shortly after he became the Secretary-General of the IIB — that is, shortly after 1924 — he took part in a meeting of the International Institute of Intellectual Co-operation (the predecessor of Unesco). He then stressed the importance of standards for paper and format of book. But an old conservative librarian vehemently opposed the idea and protested against all books being published in one regimentated standard size. However, Donker Duyvis won the day after Marie Curie set forth her arguments explaining the value and the scope of standardisation. Donker Duyvis has given an exhaustive account of his views on standards for library work, in his paper Standardisation as a tool of scientific management (Lib trends 2, 1953-54, 410-27). After World War II, Donker Duyvis took prompt steps to bring the FID into close relation with the ISO (International Standards Organisation). Now ISO/TC46 has charge of documentation standards and ISO/TC37 of documentation terminology. The establishment of the Insdoc can be traced back ultimately — though remotely — to this step of Donker Duyvis.

62 Documentation

Donker Duyvis had striven hard to have an exhaustive bibliography of bibliographies brought out periodically. The Index bibliographies has been the result. As a chemist, he had competence to go into the details of photo-copying. He had devoted considerable thought to it. He did his best to promote their use and to get suitable standards established for micro-films and reading apparatus.

63 Theory of Classification

Donker Duyvis had instinctively felt that the value of the existing schemes of classification could be improved if there were a coordination of the agencies engaged in designing and applying classification. He was a firm believer in what he called "multi-dimensional classification". It was this which made him sense the potentiality of the Facet Analysis designed in India and now being widely studied, both at the international level and in national levels. He was deeply interested in the setting up of a body to have charge of the general theory of classification as a supporting organisation for the development of UDC and other schemes. In the 1951 conference in Rome, he succeeded in the formation of FID/CA (Committee on General Theory of Classification). He threw a big responsibility on me by asking me to have charge of it as Rapporteur-General. The various new concepts developed under the auspices of the FID/CA — Zone Analysis, Sector Analysis, Rounds, Levels, Telescoping of Arrays, Telescoping of Facets, the Separation of the work in the Idea Plane, Notational Plane, and Verbal Plane respectively, the taking of a reduction in the number of schedules to as few seminal schedules as possible, the whole methodology of research in classification — during the last eleven years have laid the foundation for the design of versatile schemes of classification. I am now able to see an endless vistas of systematic investigation lying ahead of us.

I wonder if I would ever have been put on this track and could have got the chance to spend my years after retirement ever bathed in the delight of these problems but for Donker Duyvis having pulled me out of my shell and brought me into relation with the co-thinkers in the world.

7 REMINISCENCES ABOUT SAYERS

71 Realistic Approach

I joined the School of Librarianship in London in Oct 1924. The syllabus was over-weighted with non-professional subjects such as English literature, French, German, Sanskrit, and Archives. I felt that it would be wasting my time in Great Britain to take the classes in these subjects. Sayers was the first person in the staff to agree with me. He pleaded with the Director saying in effect "He holds a first class degree in English literature; he is highly competent in Sanskrit; French and German he can learn at Madras; he need not come to England for it; Archives and Epigraphy, he will have little chance to need as a university librarian". Mainly due to his pleading I was exempted from all these subjects. I could just take only the professional subjects and use all other hours in field work observing as many libraries as possible. But the red tape initiated as usual at the lowest phlegmatic clerical level in the University of Madras reached London objecting to the dropping of the French and the German classes. Here again Sayers gave a dignified reply justifying the advice he had given me.

72 Genuine Wish to Help

In those far-off days, there were very few books on Library Science. I finished studying practically all those in the library of the University College by the end of November. When Sayers found this, he told me that I should thence forward go out and study the actual working of libraries of different kinds. At that time, the Third Rural Library Conference convened by the Carnigie United Kingdom Trust was held in London. It was attended by representatives of librarians, library authorities, and the Trust. Sayers took me as a guest to the conference. He introduced me to most of the librarians present and asked them to help me in every way when I would go round the country on a library study tour from January onwards. This foresighted and unsolicited action of Sayers was of immense help to me. Indeed it is no exaggeration to say that the facilities I enjoyed to study the working of nearly 100 libraries at different stages of development had equipped me for my work in India than even the formal classes.

73 Initiation into Library Work

Before starting me on the study tour of libraries, Sayers allowed me to work in the Croydon Library System. The schedule prepared by him enabled me to work in each of the sections of Central Library and in two of the branches. The month spent in Croydon filled my mind with the necessary apperceptive mass to make full use of my visit to several libraries. Whenever I changed from one department to another and from the Central Library to a branch, Sayers gave me a precise orientation talk. These talks enabled me to eliminate every kind of wastage and learn the rope as it were in the quickest and effective way possible.

74 Open Mind

In spite of his long experience and his position in the library profession, Sayers was always ready to learn. During the period of my apprenticeship, I used to attend his library talks to adults and his story telling to children. Both his talks and story telling were lively and persuasive. It made me describe to him the Indian Kalakashepam method of story telling which interspersed music and action with narration. On the next story telling day, he produced a Kalakashepam in little. When the story mentioned putting a child to sleep, he gave a lullaby song. He introduced many other action-songs in an apt way.

75 Continuing Affection

Ever since 1925 Sayers had been in regular correspondence with me. The letters were scintillating with affection. They radiated appreciation and encouragement. His account of my works in the successive issues of the Year's work in librarianship was a stimulus to me. In every visit of mine to London from 1948 onwards, he made it a point to spend at least half a day with me. It happened that in 1948 I was a member of the faculty of the UNESCO Summer School for Public Librarians. The last week of the School was spent in London. Mr Lionel MaColvin spoke on "Faith of a Librarian". I was in the chair. Sayers was present. He expressed filial satisfaction in finding two of his students on the platform.

76 Grandpa

In June 1954, I visited England along with my wife. One day Sayers came down from Croydon and met us at lunch in Chaucer House. In accordance with Indian tradition my wife wished to serve food to him before she could eat. But Sayers insisted on his serving her first saying "In England ladies are served first". After lunch we three spent some time together. He was telling her with genuine joy about my student days with him in 1924 and my later development. But weighed with age his eye lids slowly became heavy, My wife addressed him grandpa and said, "You have been so kind to us. You have entertained me with sweet reminiscences. But it is cruel for us to tax you over much. You should now rest for a while". Sayers replied, "I can rest on every day. But I can meet you child only to day".

77 Naming the Library Chair in Madras

In December 1956, I was in Great Britain visiting the Library Schools and teaching in them. As usual, Sayers met me at lunch one day in the Chaucer House. I confided in him the action taken by my family to establish in the University of Madras a Chair in Library Science. "How do you name it? ", asked Sayers. "Sarda Professor in Library Science", I said, "in the name of my wife". He replied, "It is, no doubt, proper for you to do so. On the day I spent a few hours with you both in 1954, I realised how helpful she has been to you, looking after all the family matters herself, and releasing you totally to pursue Library Science. But that name of the Chair will not have much meaning to the librarians. Your name should be associated with it". I said that I had made up mind that it should be named after her. He then pleaded, "Why not you follow the English tradition of a lady carrying also her husband's name and call the Chair Sarada Ranganathan Professor of Library Science? I am sure your wife too will like it". When I narrated this conversation with Sayers, my wife did like it. That is how the Library Chair in Madras came to be named.

78 Unending Interest in Classification

The last occasion of my meeting him was in May 1957. I had gone to attend the Dorking Conference which was largely devoted to faceted classification and information retrieval. I spent the first night with Mr A J Wells, editor of the BNB. From his house I telephoned to Sayers. He said "I am glad to hear your voice again. When did you come? What had brought you now? " I mentioned to him about the Dorking Conference and asked him if he would come. He was first hesitant on the ground of his having had no invitation. I told him that he could come on my invitation or even on no invitation as nobody wants an invitation to go to a church or a temple. Sayers responded to this idea with extraordinary agility. Then Wells told Sayers that he was driving me to Dorking and that he would collect him in his house from Croydon. But Sayers said " Don't take the trouble to drive all the way to my house" and added that he would be waiting at a particular spot in the normal car route at the specified time. He was precise and punctual in joining us at Croydon. When he entered the car he was beaming with joy at the opportunity to go to an International Conference along with two of his old students. He was glad to meet the overseas librarians who had come to Dorking. For he had seldom been abroad and met them in their own home countries.

8 REMINISCENCES ABOUT DONKER DUYVIS

81 First Contact

Eighth October 1947 marks a turning point in my work. I was then in the University of Delhi at the invitation of Sir Maurice Gwyer. A letter arrived from the FID asking for a memorandum on "Classification and International Documentation". At that time, I knew nothing more of either of FID or of UDC than what was gathered from the introduction in the Decimal classification of Dewey and a chapter in the Manual of classification of Sayers. Nor did I know till then anything about the writer of that letter – Donker Duyvis. Three typed copies of my paper were sent to Donker Duyvis within a month thereafter. I wrote saying that he might keep one copy for his file and circulate the other two copies among those interested in the subject in the United Kingdom and the United States of America respectively. There was a prompt reply saying that it was not a paper merely for the file of FID or for private circulation to a few and asking for permission to have it published in the Review of documentation and also as a special publication of the FID. The spirit of the letter endeared him to me. On 30 December 1947 he followed it up with an invitation to attend the Conference of the FID to be held at the Hague in June 1948. I had to regret my inability to accept the invitation due to financial reasons. This I wrote in January 1948. The perseverance of Donker Duyvis was first brought to my attention in March that year. For he seems to have moved the Unesco and the British Council in the matter. The invitation of the British Council was handed in by its representative in Delhi who called on me on 29 April 1948. Thus it was Donker Duyvis who brought about the third stage of my career in general and the second stage of my work in the field of library science.

82 Second Contact

It was 2 p m 16 June 1948. I entered the Patent Office at 6 Willem Witsenplein, the Hague. A tall, well-built, handsome figure with a broad face, enlivened with a broad smile greeted me. It was Donker Duyvis. He immediately introduced me to La Maistre, the President of the FID, who was in his room. A copy of Bradford's Documentation and of my paper were on the table of Donker Duyvis. We immediately plunged into the need for redesigning the foundation of classification. Though neither India nor myself happened to be a member of the FID at that time, these two gentlemen invited me to attend the meetings of the Committee for UDC. It was in one of these meetings that the Octave Notation – now being called the principle of Sector Notation – formulated in India was approved in principle. Donker Duyvis was the foremost in supporting it. He also arranged for my addressing the conference on "Comparative Classification" on 18 June 1948. The address and the discussion lasted to a little more than two hours. This was a new experience to me. The brotherly affection of Donker Duyvis had always been a solace to me. When the delegates of the Conference went on excursion, he would not let me go along with the others in the bus. He insisted on my travelling with him in a car. I can never forget the meticulous way in which he attended to my comforts. Nor can I forget the high intellectual level of our discussion on FID in general and classification in particular. His abandonment to these two causes was indeed unique.

83 World Congress

At the World Congress of 1955 in Brussels, I found Donker Duyvis to be very ill. But his mind was quite alert. In the session on classification he himself took the chair. I was asked to speak first. It was then that I developed the concept of the "Number of digits for a single sweep of the eye" and of the "Quantum of digits for retention in memory". I suggested three digits as the optimum and six as the maximum. I inferred from these two concepts that a class number should be normally broken up by a distinctive symbol such as a punctuation mark after about every three digits. I further said that the postulate of five fundamental categories and the facet analysis based on them usually led to a class number made of several facets each with about three digits, that this implied perhaps some intrinsic quality in the present mode of human thinking, and that it happened that the CC respected these conjectures using sementically significant separating symbols instead of a dummy dot as in UDC. After my talk, Donker Duyvis felt too weak to stay and asked me to take the chair. He told me later that he felt that there was much in my conjectures and that a systematic investigation should be set up by the FID with the help of Unesco or some foundation to verify them. It is these incipient ideas that were later expounded by me and formulated as a series of research problems. A list of these problems was presented at the Warsaw Conference of the FID in 1959. Some pilot projects have been already started in India in pursuit of them. I am glad to learn that the FID is inclined to take them up in full measure.

84 Dorking Conference

In 1955, shortly after the World Congress in Brussels, Donker Duyvis asked me for a scheme for an international study of the new concepts in classification brought into vogue by Colon Classification and its associated literature. I suggested an International Seminar of about a month's duration. Eventually he passed the idea on to the Classification Research Group and the ASLIB of London. These organisations took up the suggestion with enthusiasm. The result was the International Conference on Classification for Information Retrieval held in Dorking, England, from 13 to 17 May 1957.

Paper L

PRODUCER'S BIBLIOGRAPHY

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Brings out the essential features of Producer's Bibliography basing the study on the 'Commemoration bibliography'. Shows how the modern library techniques can help to give a best and ideal structure for such a bibliography. Points out how the overall versatility of CC can enhance its utility. Throws out new light on cataloguing principles. Recommends similar pattern for adoption in INB. Shows the potentiality of librametric study in this field.

0 INTRODUCTION

The Commemoration bibliography* of the Saiva Siddhanta Works Publishing Society (Madras) is the first of its kind. It is a model bibliography. As a librarian, one must say that this was the publisher's catalogue one was craving for. It is factual, it is true, and it is almost like a self-analysis and self-search; hence it is reliable. One will get all the facts one looked for. Cataloguing art had, as a young girl, stepped out of the publisher's home and entered the mansion of the Library Profession years ago. Here she was fostered and nursed; and she became a full-bloomed bride in the form of Classified catalogue code. For the first time she has re-entered her old home, the publishing trade to illumine it with the new radiance she has acquired. Thus for the first time, a publisher's Bibliography comes out fully processed by the latest techniques and trends of library science. As it has been rightly put in the publisher's note, "The preparation of this Commemoration bibliography marks the birth of a new era in the field of Library Science in Asia, as this opens wide the flood-gates of Library System which is an ever growing organism, and lets down the currents of fresh inventions in the methodical application of the principles of Library Science to the books produced in the oriental languages".

1 PUBLISHER'S BIBLIOGRAPHY

As enunciated in Reference service and bibliography (1940) the publisher's catalogue has to represent the producer's and the distributor's angle to the user in a helpful way giving "a maximum amount of factual information about each book and about their mutual filiation". This is the ideal Publisher's Catalogue or Bibliography demanded by the Five Laws of Library Science. Something approximating to such a design was the Columbia Books 1893-1933 brought out by the Columbia University Press. But it had the dictionary pattern. Hence, it had failed to represent the "mutual filiation among subjects". The first publisher's bibliography to emerge in the fully classified pattern, which is the "pattern of to-day and to-morrow" is the Commemoration bibliography studied in this paper.

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*Ranganathan (S R). Muthukumarasuamy (R). Commemoration bibliography of the first 1,008 books. 1961. South India Saiva Siddhanta Works Publishing Society, Madras.

2 STRUCTURE

The Commemoration bibliography is a classified catalogue of the first 1,008 publications of the Society. Chapter 1 gives the genesis, and the conspectus of the general structure of the book. Chapter 2 is a librametric study of the sociology of publication. Chapter 3 entitled "Inside the Green Room" gives a glimpse of the workshop of library science where the Bibliography is built, explaining briefly the tools and techniques employed in its construction. This chapter is interesting to the layman, as it explains some of the techniques of library profession in simpler terms. It is of greater interest to a professional, as here appears for the first time some of the nascent thought on the subject and the latest mode of the building up of a catalogue by a publisher. The notational plane of CC stands elegantly translated into regional scripts for the first time. Chapter 4 gives instruction as to how to find out the required entries. Chapter 5 gives the schedule of classification in the measure of its incidence in the bibliography. It is in both Tamil and Roman scripts. Chapter 6 and 7 are the classified part and the alphabetical part respectively. Chapter 8 is the chronological list of the first 1,008 publications. The entire book is bilingual running parallel in English and in Tamil upto chapter 5, after which the classified part continues in Tamil with class numbers both in Tamil and Roman scripts.

3 SYMBIOSIS OF INTERESTS

This bibliography prepared with great care and with a comprehensive outlook represents at once the symbiosis of the interests of the producer, the distributor, and the consumer of the product viz., the books, in a way satisfactory to each one of them.

4 PATHOLOGY OF PUBLISHER'S CATALOGUE

Few publisher's catalogues arrange their entries in accordance with any catalogue code. Hence neither the entries contain the facts required by the user, nor do the entries give a helpful sequence according to their subjects. The information provided in the entries forms a snare and a hurdle rather than a help to arrive at the facts we look for a document. Many man-hours are wasted in libraries all over the world in wading through such a forest of unnecessary and irrelevant details in a publisher's catalogue. What we librarians and other users want of a publisher's catalogue is the facts, presented as per any standard catalogue code. The facts should be given in a direct and unbiased manner. If they do this, they will be saving much of the time and energy of the book-selection departments. The bibliography under study is a model for the publishers. This makes it imperative that every publishing house should employ a fully qualified librarian who is well-versed in techniques of cataloguing, classification and librametry. It will be good for both producer and consumer.

5 VERSATILITY OF CC

51 Idea Plane

Colon Classification (= CC) in its edition 6 has been used for the classification of the entries in the Bibliography. With its techniques of Facet Analysis, Zone Analysis, Phase Analysis and the Postulates and Principles for the idea plane, CC is highly versatile. It is potentially capable of keeping pace with the ever turbulent, multi-dimensional universe of knowledge. The method of CC makes us to envisage the picture of the stormy ocean of knowledge spreading the waves of varied sizes in different directions — going forward, mounting up on a rock, getting rebounded and gushing back splitting into small spring-lets - with the class number of each wavelet riding on, almost clinching to it throughout its turbulence and scalar motion. This versatility of CC in the idea plane makes it capable of being used to classify any section of the universe of knowledge uniquely, in its proper filiation and as minutely and as expressively as is required. This is our experience with the techniques of CC in the idea plane as a result of our efforts to apply it for the classification of drawings, production papers, store-stocks, and files in one of the biggest engineering firms in Bangalore.

52 Notational Plane

The notational plane of CC from its first edition to the seventh edition, which is now under preparation, has undergone such progressive evolution that to-day it is capable of implementing almost all the demands of the idea plane. The use of four zones, the diverse sectors in each zone, the postulates for notational plane, the telescoping principle, the sector device and the latest technique for interpolation and extrapolation of newly emerging entities have all made the notational plane of CC a highly potent and resilient tool of the idea plane. In fact, the notational plane is even helping to open new vistas in the idea plane. On occasions, it is even capable of solving some problems for the idea plane. This has been our experience in the Research Circle in Bangalore. Perhaps the reason for this is that the notational design of CC is brewed out of the intuitional furnace of a mind that had undergone quite a long and thorough discipline of mathematics, had its deep roots in Indian spiritual heritage, and got devoted to the growth of library science for its life time.

53 Versatility with Oriental Literature

The versatility of CC in classifying oriental literature is revealed in the Commemoration bibliography. The classic device of CC equips it eminently to organise the ancient and medieval literature of India and other oriental countries. Similarly the provision of the basic class Mysticism (Δ) brings together and arranges helpfully the rich spiritual heritage of mystical literature of India. This capacity of CC is as much serviceable in occidental literature as in oriental literature. But this fact seems not to have been understood by some of the Western writers on classification. They have not devoted much thought to the universally applicable principles at the foundation of the structure of CC. This has misled them to declare, with a bluntness born out of short-sightedness, CC as a "good scheme specially suited to classify Indian and oriental literature". Indeed, this is nothing but damning it with faint praise!

54 Versatility with Science and Technology

The technique of facet analysis is found to be extremely facile and uniquely suited to classify the documents on Science and Technology. The Schedule for depth classification of management by Dr S R Ranganathan is an example of the application of the techniques of CC to classify micro-documents in the Science of Management. In fact, in industries the techniques of CC are being tapped to classify even entities other than books — such as drawings, materials etc.

55 Notation of CC in Indian Letters

The Roman letter along with Indo-Arabic numerals and punctuation marks have been used by CC for international use. For the classification of entries in regional bibliographies as also for classification of documents in linguistic libraries, there was need for a notation in the scripts of the regional languages instead of the Roman Script for use of those who do not know English. This demand was perhaps felt by Dr S R Ranganathan unconsciously. While doing the Bibliography under discussion it came to the surface. Hence in section 3 of the book he has given a conversion table for translation of the notation of CC into Indian scripts. In providing a conversion table, the fundamental phonetic similarity of the characters in Indian languages has been exploited usefully to secure co-ordination. This is very useful for standardisation. It will be easy to convert the notation between any two Indian languages. To arrive at the usefull phonetic equivalence, characters not found in all Indian languages have been omitted. Use of consonants only for the base would have resulted in elegance of notation. But the presence in Tamil of a smaller number of consonants than in the other Indian scripts necessitated the use of consonant-vowel combinations. This in turn provides quite a large base. In the Nagari script and its variants the Anuswara of any letter of the alphabet is taken to be the equivalent of the corresponding letter in Roman smalls. For Dravidian scripts Anuswara is used after the host letter to secure the same result. This arrangement puts the notation in Indian scripts at par with that in the Roman script. Similar conversion should be possible for any other script.

6 CLASSIFIED CATALOGUE CODE

The entries in chapters 6 and 7 are according to Classified Catalogue Code (= CCC) in its forthcoming edition 5. It throws out new light on cataloguing principles.

61 Linguistic Code

Here for the first time a supplement to the Classified catalogue code has been framed for an Indian language, i e Tamil. This is in accordance with the principle of local variation, at the 3rd level, for a Linguistic Code. The inflexional nature of the Indian languages calls for such a deviation in the code. The supplement gives the style of writing and the list of abbreviations to be used for that language. This paves way for evolving similar codes for other Indian languages.

62 New Light on Cataloguing Principles

Some of the modifications of rules for style of writing the entries in the catalogue take CCC one step further towards an international co-ordination of cataloguing principles. Some of the problems posed in edition 4 of CCC are solved here. The solution has been precipitated out of the experience of applying CCC to Tamil language.

621 Multiple Author Heading

A far reaching change is with respect to multiple author headings. Edition 4 of CCC laid down the rule that the heading of an entry should be in the nominative case. But it was found that the names of authors and collaborators were used in the instrumental case in inflexional languages such as those in Russia and in India. In the case of Tamil language unlike in English and other semi-agglutinative languages the conjunction cannot be inserted between two nouns in the nominative form. On the other hand each of the nouns will have to be varied morphologically. This morphological variation will disturb alphabetical sequence. This problem has been elegantly solved by the following new rule:-

"The conjunction "and " is replaced by the punctuation mark comma ", " in the case of joint authors in a heading and joint collaborators in the title section as well as heading".

622 Nominative case for the Title Section

Again the instrumental case is secured in English by prefixing the preposition "by" to the noun in the nominative form. Therefore the work denoting a collaborator in the title section of the entry can be lifted as it is for use in the heading for the corresponding book index entry. But in Tamil and other inflectional languages, the name of a collaborator occurs in the title section in the instrumental case-form. This necessitates the catalogues arriving at the nominative case-form while passing from the main entry to the alphabetical index entry. The Commemoration bibliography has obviated this by the adoption of the following new rules:-

1 The instrumental preposition "by" is replaced by the punctuation mark semicolon ";" in the title section.

2 The descriptive term for a collaborator follows the name of a collaborator (with a comma inserted between them) instead of preceding the name of the collaborator and the instrumental preposition.

623 Solutions Worth Considering

The above solutions are worth considering for adoption in the forthcoming International Conference on Cataloguing Principles to be held in Paris from 10 to 18 October 1961. As shown in the Headings and canons (1955), there are three levels for Catalogue Code - 1 International code, 2 National code, and 3 Regional code. The aim of a perfect catalogue code should be to reduce the number of rules for permissible deviation from code of level 1, at levels 2 and 3 to a bare minimum. As few as possible of the rules should be subjected to local variation. This shall be the purpose of any international conference on cataloguing principles. Any rule that makes a move forward to that end should be welcomed with an open mind. The introduction of the above rules form a milestone towards this end by replacing the fluctuating auxiliary words —conjunction and preposition — in the heading and title portion by uniform punctuation marks in international use. Thus the sway of the rules of the international code is extended appreciably.

7 A LEAF FOR THE INDIAN NATIONAL BIBLIOGRAPHY

The ideal form for the publication of Indian National Bibliography is the one being advocated by Dr Ranganathan since 1957. Indian States are now fairly linguistic in structure. This makes easy and helpful for each state to bring out the Bibliography of the books in its own language. The National Library may confine itself to the preparation of the bibliography for Sanskrit, English and any other languages which do not have a special state for them. It shall also co-ordinate all such annual bibliographies. So the periodical issue will be a multi-volumed affair. Each volume will be in the script of the language it covers. But the script of the class number will be in that of its own language and in addition in Roman script also. This arrangement helps to make the best use of the bibliography. 80% of the readers who are interested in the bibliography of a particular language belong to that linguistic group. It will be helpful for them if the entires are in their script. The other 20% of the scholarly readers will be able to know the subject of each entry by its call number. If their interest demands it, the entry can be got translated easily. So the greatest good of the greatest number can be secured without ignoring the interests of the minority or the majority and without any avoidable wastage of public funds in the compilation of the National Bibliography of India. The present Commemoration bibliography is a preview of a linguistic constituent of such presentation of the Bibliography of India. The Indian National Bibliography can take a leaf out of this.

8 LIBRAMETRIC STUDY

Librametry is the study of books - their production, distribution and service - by statistical methods. This is another tool given to Library Science by Dr Ranganathan to take the art of librarianship into the Spiral of Scientific Method. The potentiality of this new tool has been very clearly shown in chapter 2. A thorough study of the first 1,008 publications of the Saiva Siddhanta Society has been made from different angles, taking into consideration the frequency of publication by language, by year of publication, by subject etc in different sequences. Very interesting and valuable inferences are made out of the study. The Librametric periscope is made to focus on the society. It penetrates its cultural complex and gauges its ups and downs. It probes into the cause of the fluctuations in its interests. Then the study is focused on the managerial performanc of the top management of the concern. It makes an analysis of its efficiency. It puts its finger on the pulse of its weakness and strength. It helps where to make improvement. The librametric study is as thorough and interesting as it is new. It has immense potentiality in future. The librametric study of the book service in a region may in future be employed to study precisely and thoroughly the cultural fluctuations of its people, the interests of its citizens, the intellectual level, the moral standard, the sociological status etc of its residents. All these developments open new horizons to be explored by the techniques of library science.

Paper M

SUPPORTING DIVISION OF DOCUMENTATION

RESEARCH IN DOCUMENTATION

S R RANGANATHAN

Traces the historical background of the several functions of the library — past and present. Describes the change in the outlook of scientific research after second world war. Illustrates the emergence of levels of research. Points out the role of documentation as a feeder of research. Explains the demands on documentation and the need for research in documentation. Outlines the organisation of documentation research in India.

1 INTRODUCTION

11 Original Function of Library

The profession to which I belong was originally called that of a librarian. Now we call ourselves documentalists, --not merely information scientists but documentalists. The idea of a librarian was originally that he was one who was to carefully safeguard any written document that happend to flow into the four walls of the library. The function of a library was first taken to be to preserve the cultural literary remains of a community. We have now moved very far from that idea. When that was the main function, in our country, a library was denoted by the term 'Bhandara' — a store house.

12 Second Function

A few centuries later, it was asked to take up a second responsibility— the responsibility to help the perpetual self education of every individual. When that function was taken up by the library, the librarian came to be called an 'Acharya' — a teacher. We still have the saying in our country — 'Koshavan Acharyaha'. This continued for a long time.

13 Third Function

About the middle of the nineteenth century when industrialisation began, active life and inactive life of leisure got totally separated out. In the rural civilisation it was difficult to distinguish clearly, between active time and inactive time. I don't know whether it was all leisure time or whether they were truly integrated. But industrialisation atomised many things.

131 Leisure

Industrialisation atomised time also -- into active time and leisure time. The problem came, 'What to do with leisure time, -- pure leisure time'? People had

Based on the Presidential address of Dr S R Ranganathan at Seminar on Documentation held at Electronic Research & Development Establishment, Bangalore, on 28 June 1961.

warned us about pure unoccupied time. As early as the fifteenth century, a Tamil poet had said 'Shumma Iruppatu Arithu' — very difficult to maintain leisure time. If you are not able to tame it, it will pounce upon you and tear you to pieces. Therefore, it was a problem in a country which was industrialised in the nineteenth century — how to engage the people in their leisure time? It was for this purpose that they conceived of library legislation. And indeed the library had to take up the responsibility of occupying the leisure time of the people in a harmless way and if possible in an elevating way. That was the third function which was put on the library.

2 PRESENT FUNCTION

21 Advent of Democracy

Then about the time after the end of the first world war, a further burden was thrown on the library. That was the result of the spread of democracy over a much larger area than what it was before the first world war. To take a typical country — the country that was carved out after the first world war — Czechoslovakia, it was very significant that the first President was a professor — Prof Mazaryk a great thinker. What he said was "We cannot maintain our democracy unless our citizens are correctly informed — continuously correctly informed."

22 Mazaryk Public Library System

Therefore, from his Presidential chair he issued out several ordinances, directing that the country should have a net-work of public libraries where, every citizen could get his information, not cooked information, not partisan information, but information of all kinds, so that he could collate them and arrive at his own decision and judgment. But alas, even that system — net-work of public information — was not able to stand the strain of the catastrophe that came some years later. In fact two years ago, when I was talking to some of the top leaders of Czechoslovakia, I just asked what happened to the public library system of Mazaryk. They told me something very revealing. "But for that public library system, we would have been much worse than what we were. It was something like an earthquake that came. We were able to stand it and stem it because of the informed public we had". So information-- in political level — giving that information was added on as the fourth function of the library.

3 DEVELOPMENT AFTER WORLD-WAR II

After the second world war, a still another new function was added. It arose out of the second world war itself. It is a truism to say that a war is no longer a war of muscles. It is now a war of brains. That is why LRDE (Electronics Research & Development Establishment) is an integral part of our Defence Organisation.

31 New Jersey Experience

In fact about 1950 or so shortly after the war, when I was touring the United States I went to an industrial house in New Jersey. I was taken round. I met an officer -- a research officer. He gave me a very interesting piece of information. I am sure it would be common knowledge among the people in Defence Service; but it may not be well-known among the others. He told me that at a very critical time in the second world war every thing turned on having a sufficient number of crystals for communication purpose — the very problem on which you are engaged. He said they were going short of crystals — natural crystals — and they were alerted that unless they produced a substitute, they would lose the war. He said he was one of those geologists, who was asked to find out some substitute. He tried all kinds of known materials but he could not find anything suitable. Then he decided to produce an artificial crystal. He spent a long time over it. And he discovered by a chance record, in an old geological periodical, the actual measure of the pressure necessary to produce a crystal. So his next problem was to pass this question on to the engineer--

the pressure engineer if I can call him so— to produce the necessary high pressure. And the engineer succeeded. But when that pressure was possible, and the liquid was put into the vessel and the pressure was applied to produce the artificial crystal, invariably before the liquid was solidified the vessel broke. That gave him another problem. He could not find any material which could stand that pressure. Again there was trouble. The problem was kicked on to metallurgy. Even then the metallurgical division had to search for information, as to what the trouble was due to. He found out that the pressure should be so and so. How to produce a metal to stand that pressure? At this stage, no existing document came to his help and he had to find out information from his own brain and finally they did produce the metal that could stand the pressure. He said, artificial crystals were made and the war was won. We must give due allowance for a slight exaggeration by the ehthusiast in the subject — I hope you will grant that every specialist should be sufficiently enthusiastic even to the extent of exaggeration. Otherwise he will lose his progress.

4 DEMAND ON SCIENTIFIC RESEARCH

41 National Responsibility

Now this experience made every after-war agency including defence agency to realise that to prepare for any contingency, God forbid, in the world it should ever be in the foremost, in the direction of scientific invention and progress. To add to that, there is a mounting population pressure. I think we are getting towards 3,000 millions now. That itself has produced a new problem. How are we going to support this teeming population? It is here that the civic responsibility and the defence responsibility of a nation meet. To maintain the population pressure, we had to be incessantly engaged in fundamental research, in applied research, and in industrial research. To be prepared in defence in modern days, we have to be ever foremost in research.

42 Emergence of Levels of Research

What does this mean? It means a great change in the research organisation of the world. In the past, research was the pastime of exceptional people, People, who need not have felt social pressure but went forward into research purely under inner pressure, often discovered new ideas. There were very few people to follow them up and to make them serve social purpose. In the past, it took several centuries to bring the benefits of an invention down to the level of the common man. We know how it has been reduced to-day. It has become a period of 10 years, 5 years, and very often only one year, now-a-days. Research to-day has therefore to depend not only on an exceptional man of genius — who comes occasionally, whom we cannot order about — but depends also upon an army of people who work in collaboration with that exceptional man of genius. We want a hierarchy of people, beginning from the genius who takes up a problem on his own accord, down to the last man, who carries out the actual application.

43 Research Team as an Army

This army can be divided into a series of divisions. I suppose you have your task division. You also have the supporting division. The task men had to be supported by the supporting division. In the supporting division, you put all those making research, making scientific progress, and harnessing science for the service of defence.

5 DOCUMENTATION

51 Documentation — a Feeder of Research

During the last few years we have realised that the supporting division wants for its own work, another supporting division — a supporting division of the second remove, if I may so call it. This supporting division is the documentation division for the army of scientific workers doing their job as a team on each subject.

52 Coordination of Research at all Levels

As Prof Thacker said, to-day except under war conditions they have to work as a team, not only within the country but as an international team. We can imagine what levels of intellect have to be poured into the field of research and how difficult it is to co-ordinate their effort.

521 An Example

To give but one example, one of the firms in New York was just trying to find out, about 10 or 12 years ago, the probable uses of the titanium earth, exported in large quantities from the Kerala Coast of our country. It had a staff of 300 research workers just to study the possible uses of titanium. It had not yet begun to put anything on the market. The team of 200 or 300 research workers could not be made to work along economic lines. They found that 6 months after 'A' had discovered something, somebody had told him that 'B' had already found it one year earlier. That was the kind of wastage that was discovered in that company.

53 Application of Documentation Technique

At that time, I happened to be travelling in the United States. The enterprising librarian of the company felt worried that it was not possible for her to do her best for her firm. She tried to understand why it was so. She found that the American technique put all the documents on titanium under one single class number. One need not at all give that number to any document in that case. She came across an Indian technique. So she contacted me as I was there and then we started working out a more detailed scheme of documentation for titanium — not that we knew titanium, not that we knew everything that could be done with titanium. But this technique, the technique of the supporting wing of the supporting division -- the supporting division of second remove -- is of great value. By this technique, we can classify anything new that turns up. We know how to receive it, how to organise it, and how to store it.

54 Saving Effected by Documentation

When we applied this new technique to that firm, its manager told us that many thousands of dollars were saved as a result of the information — all found only within their own house documents, very little from outside — being promptly made available to every research worker within the firm. Now then you have to depend upon this supporting division of the second remove.

6 DEMANDS ON DOCUMENTATION

But something more is happening to-day. One, who has tasted, — the research worker who has tasted — the value of the supporting division of documentation, naturally asks for more and far more. Previously he had to spend more than a month in searching for information. Now as a result of the service of the documentation division, he is able to get it within one week.

61 Reducing the Time Element

But what does the research worker say? He asks, "Why one week? Why not one day?" And you manage to give it in one day. Then he asks, "Why one day? Why not one hour?" This is natural. We must be happy that the human mind works that way. We have reached that stage in documentation. He does not want to wait the whole day for the information. Well, this has brought the necessity for the next step. How are you going to cut short this time for retrieval? This is a big problem.

7 EXPEDITING THE SEARCH

71 Enunciation of Exact Enquiry

It depends on the way in which you arrange and store your documents. That is of-course necessary. But that is not sufficient. But it also depends on the way in which you are going to talk to the research worker and find out what information he wants. The research worker is seldom sure of what he wants. Even if he were sure, he thinks that the man in documentation division cannot understand him if he is precise, and so he tries to state his problem in very very general terms. Having been working with the research workers for thirty or forty years, I know it is difficult for anyone to enunciate his question precisely when it concerned something new, which is without a name, and which is without any co-ordinate to fit it. And after all we have to communicate through known words. The known words are too vague. Our own ideas do not crystallise until we get a proper terminology.

72 Shop Analogy

It is very much like your going to a shop, to purchase some sarees for your wife. Before going, you ask her to describe the colour she wants. She may give a thousand and one descriptions. You may take down notes. But I don't think that either she is sure of what she wants or that you understand her. Both of you then go to the shop. The moment you go there what does the salesman do? He pulls out dozens of sarees and spreads them out. She then feels them one after another and says, "This is exactly what I wanted." That is the plight of research workers asking for information.

73 Organisation of Information

Therefore, the technique of documentation should be sharpened not only to organise and to arrange all printed materials for retrieval, but also to analyse the mind of the research worker and to help him in the exact enunciation of what he wants.

731 An Example

It was only two or three days ago, that the smart librarian of a local industrial house was narrating to me his experience. Somebody came to him and said, "I want to find out the weight of a huge plate made of such and such metal and perforated in such and such way. I want to get it quickly. Otherwise the work of a whole gang of hundred workers will be stopped." He had been spending the whole day turning through various pages in order to find the information by himself. But he could not get it. Finally he thought of going to the library. Unfortunately the designation of the man in the library was 'Librarian'. If they had called him 'Information Scientist' perhaps he would have gone to him earlier! Somehow, he finally went to the librarian. The librarian first said, "Why not you weigh it?" The enquirer said, "It is difficult to transport the whole piece to the place of weighing. It will cost much. It will also cost much time. I want to do it by some kind of formula. Is there any ready-made formula for it?" This information, which he wanted, was not enunciated by the enquirer immediately. Within 15 or 20 minutes after the problem was correctly posed, the librarian was able to put his finger on a document of the ISI which gave the formula, but which had been locked up with various other things in the library.

8 NEED FOR RESEARCH IN DOCUMENTATION

Now this is all chance. You cannot depend upon chance; you cannot afford it, so much money will be wasted; and so there is need here for another kind of supporting section, supporting section of the third remove. If your own establishment is the supporting division of the first remove of the Defence Organisation, if your documentation section is a supporting division of the second remove, within the documentation section you want a subsection which is the supporting division of the third remove. The business of this subsection is to forge new techniques of documentation to make literature-search and to supply the wanted documents without any loss of time. To-day the world has not yet begun to realise the importance of forming this supporting division of the third remove, to engage itself continuously in research in documentation techniques.

81 Documentation Research in India

It is no exaggeration to say that serious intensive research in Library Science and Documentation began in India about two decades ago. It has made good progress, though it had no monetary support from any source. It is only during the last two years that a big foundation in America has set apart millions of dollars just for this purpose of supporting research in this field. Thus we do not have much to learn in this matter from other countries, because nobody has anything much to give. On the other hand, much progress has been made in our country, in research on Library Science and Documentation. Above all, an Indian school of thought with its own distinctive methodology in research has come into existence in our country.

82 LRDE Information Centre

LRDE has placed some men and money for the promotion of research in its Technical Information Centre. This will enable this Centre to make its own research in the measure of its needs. It can also make the results of its research available for use not only in this particular LRDE but in every documentation centre in India.

83 Insdoc

Professor Thacker asked me to prepare a plan for the All India Documentation Centre. It has been generally approved. There is an important section. In that section, I have emphasised that there should be a cell in the Insdoc, engaged in research in documentation. We should have it installed and manned by persons freed from the repetitive work of the Insdoc.

84 Levels of Documentation

There is great demand for documentation to-day, not only in Defence Service but also in Civil Life. We want documentation everywhere. It is so throughout the world. This documentation work and service has to be done normally in three levels — International, National, and Local Levels. In a vast country like India, we have to add a fourth level. An intermediate regional level is necessary. This is found also in Russia, which is comparable to India in its size. We have started with the national level in our country. National level cannot function up, unless local levels begin to tick.

85 Viniti and Insdoc

The Russian Viniti corresponds to our Insdoc. Viniti was started two years after the Insdoc was started. Insdoc is still lingering with a staff of one hundred. But Viniti has already a staff of two thousand. Even with this large team, Viniti finds itself insufficient to feed all its many local documentation centres. But I do not know, if we will approximate to it even at the end of the Third Five Year Plan period. My own feeling about the Insdoc has always been that we have not been able to function up as much as we ought to, because no documentation wing is attached to the industrial and research institutions in several places, calling for a higher quality of work from the Insdoc.

85 Division of Labour at Different Levels

We can now have a helpful division of labour between the International, National, and Local Documentation Centres. There will be many difficulties cropping up in the day to day work in each local documentation centre. But there must be coordination. For the technique will be common, whatever be the field served.

86 Research Cell of Insdoc

The research cell in Insdoc should have sub cells in all important centres like LRDE, if the Defence Ministry will allow it and in places like the National Aeronautical Laboratory just started, the Indian Institute of Science, and the Jamshedpur Factory. The research cell in Insdoc should not only coordinate the work of the research sub cells in such places, but also get itself fed with the problems picked up by them. The cell in the Insdoc will then do fundamental research in documentation and the cells in the local documentation centres will do the applied research. It is only by such a coordination of the research cells in documentation that we shall be able to get ahead of other countries. My own faith is that we have had a start over other countries in regard to documentation research techniques. Therefore, we can easily go ahead of them. Let us put our heart seriously to this task.

Paper N

CHANGE OF (BC) IN DC EDITION 16 :

IMPACT OF CC ON DC, 1

B GUHA
PN NEOGI
GR PARKHI
AS RAIZADA
TS RAJAGOPALAN
HR VOHRA

Studies the 150 subjects of DC ed 14 in which DC ed 16 has made changes in (BC). Compares the new (BC) with the (BC) of the same subject in CC. Shows that in 69% of the re-allocated subjects the new (BC) is the same as in CC, and in 87½% of the cases of concentrations the (BC) chosen for concentration is the same as chosen by CC. Points out that DC ed 16 has also scattered subjects on the basis of common isolates and broken up composite isolates as obtains in CC.

CONTRACTION USED

(BC) = Basic Class
CC = Colon Classification
DC = Dewey Decimal Classification

1 INTRODUCTION

The papers proposed to be included in the series of articles "Impact of CC on DC" have been stimulated by a comparison of ed 14 and 16 of DC on one side and CC on the other. DC was designed largely at the intuitional level in the context of the literary warrant prevailing in the 1870s. But CC came to be designed in the 1920s. During this interval of half a century a good deal of change had come in literary warrant.

11 Emergence of Theory of Classification

Further, the experience gained by society in the extensive use of classification in several countries had also thrown some light on the psychology and the readers' approach to a classified collection of books. Again during the last 30 years a considerable thought has been turned on the theory of classification. Sayers initiated this work. Bliss carried it further. Ranganathan took it to a deeper level in his Prolegomena to library classification (1937). In the 1957 edition of this book the foundations of classification theory were relaid. Three major features of this new foundations are:

1 Separation of the work in the idea plane, the notational plane, and in the verbal plane respectively;

2 The postulation of the Five Fundamental categories — Personality, Matter, Energy, Space, and Time (PMEST); and

3 Facet analysis on the basis of PMEST, some more postulates, and five principles for the determination of a helpful sequence among facets including the assignment of facets of a subject to appropriate levels and rounds.

The latest account of the last mentioned factor will be found in the ed 3 of the Elements of library classification [R1].

This paper presents some of the findings of the working party of the Library Research Circle Delhi, formed to study the relocations of the DC ed 16. The study was undertaken under the guidance of Dr S R Ranganathan All the authors are in the Staff of the Insdoc, New Delhi -12

12 Organisation of the Papers in this Series

121 Papers Concerning the Idea Plane

The first few papers in this series will give the results of our study in the idea plane. It is in this plane that the ultimate sequence of classes is fixed. The sequence is brought to attention by the class number assigned to each class. For this reason class numbers have necessarily to appear in these earlier papers too. This should not however mislead one to take these papers as concerning the notational plane. Let it be repeated that they are essentially concerned with the idea plane.

122 Paper Concerning the Notational Plane

One paper will be devoted to a study of the fundamental features in the notational system.

123 Papers Concerning the Verbal Plane

Another set of papers will be concerned with the verbal plane. They will examine in particular the respect shown by the names of classes and isolates in the schedules to the Canons of Context, Enumeration, and Currency. They will also examine the extent to which the terms in the schedules are compact and otherwise helpful in the choice and rendering of headings and sub-headings for subject index entries and class index entries.

13 Influence of CC on DC

The development of these papers has disclosed a considerable influence of CC on DC ed 16 so far as the idea plane is concerned. But there is no evidence of any such influence in the notational and verbal planes. If at all, DC ed 16 does not seem to have made any attempt to prune its terms in a helpful way. However the Canon of Enumeration has been used to two different ways. This will be explained in a latter paper in this series. There has been the least possible influence of CC on the notation in DC ed 16. The only noticeable factor is the greater respect to the Octave principle of CC s DC in ed 16 more than in any other edi This will be examined in detail in a latt in this series.

2 INFLUENCE IN THE IDEA PLANE

Of course the most significant influence of CC on DC is in the idea plane. This concerns:

1 Re-allocation of a subject to a different (BC) in ed 16;

2 Concentration in one (BC) of DC ed 16 of classes which had been given numbers in two (BC) in ed 14;

3 Scattering into two or more (BC) in DC ed 16 of subjects concentrated in one (BC) in ed 14;

4 A similar happening in DC ed 16 in respect of sequence of facets;

5 A similar happening in respect of arrays in a (BC);

6 A similar happening in respect of a single array;

7 Making the locus less sharp; and

8 Making the locus sharper.

21 Analytical Study

The 851 changes in the class numbers of DC ed 16 mentioned in its introduction (called relocation) [D1], are analysed into several groups as set forth in Sec 2 above. This paper is concerned with items 1, 2, and 3 only of Sec 2 above.

22 (BC) for Comparison

For convenience the CC Main Classes and Canonical Classes have been taken as the (BC) in most cases. This gives a broader base for fruitful comparison. In a few cases like Meteorology, and Mathematical Geography these host classes themselves have been taken as the bases for comparison.

23 Three Kinds of Re-allocation

55 classes have been transferred from one (BC) to another. We shall call this "Change in (BC)". 85 classes originally shown in two or more (BC) have now been brought into a single (BC). We shall call this "Concentration in (BC)". In 8 cases, the opposite has happened, a class originally shown in a single (BC) has been shown in two or more (BC) in DC ed 16. We shall call this "Scattering among (BC)".

3 CHANGE IN (BC)

We shall group these 55 changes in (BC) under their original (BC). This gives rise to 17 groups. These groups of original (BC) shall be taken up in the decreasing sequence of the number of classes given away by them. As many as 11 re-allocations have been made from the (BC) Medicine to other (BC). This is the largest number of re-allocations made from any single (BC). (BC) Engineering comes next, giving away 8 of its classes to other (BC). Each of 5 (BC) gives away one of its classes.

31 Re-allocation from (BC) Medicine

(BC) Medicine has given away 11 classes to 8 different (BC). These new (BC) are Engineering, Anthropology, Palaeontology, Home Economics, Psychology, Law, and Biology.

310 Note

In the tables given hereafter, the first column gives the subject re-allocated. The second column gives the Class number in DC ed 14. It also adds the successive links as we go up the chain from the specific subject in column 1 to its host Basic Class. Column 3 gives the class number in ed 16 of DC. It also adds the successive links as we go up the chain. Column 4 gives the class number in CC, ending with the class number concerned. It also adds the successive links as we go up the chain. Column 5 has one of the symbols '+', '-', or 'x'. The symbol '+' means that the new (BC) of DC is the same as the (BC) in CC. The symbol '-' means the new (BC) of DC is different from the (BC) in CC. The symbol 'x' means that the (BC) in ed 14 of DC was the same as that in CC but it has been changed to some other (BC) in ed 16.

311 Re-allocations to (BC) Engineering

Subjects	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remark
1 Microscopic analysis (of water)	613.33 Microscopic analysis, Beverages, General and personal hygiene, Medicine.	628.16 Water purification, Water supply engineering, sanitary and municipal engineering, Engineering	D85:(E:3, 3) Micro-analysis, Water supply, Sanitary Engineering	+
2 Biologic analysis (of water)	613.34 Biologic analysis, Beverages, General and personal hygiene, Medicine	Same as above	D85:(E:3, X) Biological analysis, Water supply, Sanitary Engineering	+
3 Purification (of water)	613.35 Purification, water as a beverage, Beverages, General and personal hygiene, Medicine	Same as above	D855 Purification, Water supply Sanitary Engineering	+

Annotation - 1 The host class for all the above three subjects is Sanitary Engineering in CC. It was Hygiene in DC ed 14. It has now been made Sanitary Engineering in DC ed 16.

2 This appears to be a happy change. The need for purification of water and the related problems of microscopical and biological analyses are subjects falling within the (BC) Medicine. But the technique of purification belongs to Sanitary Engineering. Further the analysis of water is the work of a chemical analyst. He comes into the picture only as a help to the sanitary engineer, at his invitation as it were. For these reasons the three classes in question belong to Sanitary Engineering and not to Public Health qua Public Health.

312 Re-allocations to (BC) Sociology and Palaeontology

Subjects	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
4 Anthropologic anatomy	611.014 Anthropologic anatomy, theory, Anatomy, Medicine	573 Physical anthropology, Anthropological and biological sciences	Y:2 Physical, Sociology	
5 Palaeontological anatomy	611.016 Palaeontological anatomy, Theory, Anatomy, Medicine	560 Palaeontology	H6:2 Anatomy, Palaeontology	+

Annotation - 1 In CC the above two subjects are in two different (BC) — Sociology and Palaeonotology respectively. In DC ed 14 both of them were in the host class Anatomy in the (BC) Medicine. DC ed 16 has shifted them to the (BC) Sociology and Palaeontology respectively.

2 This conformity of DC ed 16 with CC is a happy one. In both the subjects under consideration, Anatomy is only the Problem or Energy Isolate studied in its application to a social group and a palaeontological specimen respectively. These two latter are Personality Isolates. Thus, they are more concrete than the Energy Isolate — Anatomy. According to the Principle of Increasing Concreteness [R2] read along with the Principle of Inversion [R3] the sequence of facets in a subject should be — concrete, less concrete. This is implemented by CC numbers. DC ed 14 did not implement it; but ed 16 implements it. It may be noted that though DC ed 16 has assigned the above isolates to their correct (BC) yet the Engery Isolate — Anatomy has been dropped in the second case i e, Paleonotological Anatomy.

313 Re-allocations to (BC) Home Economics

Subjects	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
6 Food requirement for adults	612:395 Ration or food requirement of adults, Nutrition to Metabolism, Digestion, Physiology, Medicine	641.1 Food values, Food, Home economics	L:573 Nutrition, Public health & hygiene, Medicine	+

7 Food requirement for children	612.394 Ration or food requirement during growth, Nutrition & Metabolism, Digestion, Physiology, Medicine	649.3 Feeding and meals, Child care and home nursing, Home economics	L9C:573 Nutrition, Hygiene, Children, Medicine	+
8 Food for infants	613.22 Food for infants, Food & Dietitics, General and personal hygiene, Medicine	649.3 Same as above	L9C:573 Same as above	+

Annotation - 1 The host class for all the above three subjects in CC is Nutrition in (BC) Medicine. In DC ed 14 the host class for the first two classes was Nutrition and for the third class it was Hygiene — both in (BC) Medicine. DC ed 16 has shifted all the three subjects to the (BC) Home Economics.

2 This move of DC ed 16 is not a very happy one. All the above subjects are essentially concerned with problems of Nutrition. The physiology of Nutrition is the process of assimilation of food, in an organism, to build and maintain tissue and to release energy. For the maintenance of good health proper nutrition is required. An individual gets the nutrients required to meet his bodily needs through his daily food. So in the selection and preparation of wholesome food, a knowledge of the nutrient requirements of the body and their proportions in various foods is necessary along with other considerations like taste, smell etc. What is studied under Hygiene is the Hygiene of Nutrition, whereas, under Home Economics the findings of this science are applied. It may now be seen that all the above subjects can be treated from both the points of view. It is true that a modern educated housewife knows much about nutrition and applies the principles for the efficient running of her home, but she cannot herself take the place of a hygiene-scientist and do the necessary scientific investigations in nutrition. She has to take the results given by the hygiene-scientist. Hence, there is need for nutrition to be given a place in both the Basic Classes, though with different connotation, as the chains in ed 14 and ed 16 show. Therefore, this move of DC ed 16 purporting to transfer the classes from the (BC) Medicine to the (BC) Home Economics is not in the right direction. It is like robbing Peter to pay Paul. Paul should have been paid; but Peter should not have been robbed.

314 Re-allocation to (BC) Psychology

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
9 Effect of disease on intelligence	612.8215 Effect of disease on intelligence, Physiologic psychology, Nervous centres & Brain, Nervous system, Physiology, Medicine	151.29 Factors affecting intelligence, psychological tests, Intelligence, Psychology	S:720g L:4 Disease influencing intelligence, Psychology	+

Annotation - 1 CC had always placed the subject in (BC) Psychology. In DC ed 14 the subject was in the (BC) Medicine; but it has been shifted to (BC) Psychology in DC ed 16.

2 Viewed from the idea plane the class in question is a two-phased one. This is implemented in the notational plane of CC by making both the constituent (BC) show themselves forth in the class number. But DC notation cannot show this relation, at the notational level. It has forcedly to make it a single-phased one. The question is into what (BC) the subject is to be placed — Medicine or Psychology. It looks as if DC ed 14 placed it fortuitously in (BC) Medicine. For, in those days phase analysis was not widely known. A rational method for determining the first phase had not been firmly established. Now that 'phase relation of influence' has been well understood [R4], DC ed 16 has fallen in line with CC.

315 Re-allocation to (BC) Law

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
10 Expert testimony and other medico-legal relations	614.23 Expert testimony and other medico-legal relations, State control of medicine, Public health, Medicine	340.6 Medical Jurisprudence, Law	L0bZ,94 Evidence, Medical Jurisprudence, Medicine	x

Annotation - 1 In CC the host class for the subject is Medical Jurisprudence under the (BC) Medicine. In DC ed 14 it was Public Health in the (BC) Medicine. DC ed 16 has re-allocated it to the host class Medical Jurisprudence in the (BC) Law.

2 The change in the host class from Public Health to Medical Jurisprudence is a happy one and it conforms to the practice of CC. But DC and CC differ in respect of the (BC) to which Medical Jurispurdence itself should be assigned. CC places it in the (BC) Medicine but DC places it in the (BC) Law. What is this difference due to? It is due to the class Medical Jurisprudence being two phased. The phases are Medicine and Law. As stated in annotation 2 of Sec 314, the issue should be determined in the idea plane by answering the question what is the primary subject of exposition and what is the subject which biases its exposition. CC takes it that the primary subject of exposition is the (BC) Medicine and the biasing subject is the (BC) Law. CC notation lays bare this fact. Since DC notation has no provision for phase analysis, in all probability the re-allocation from Medicine to Law is only a fortuitous one.

316 Re-allocation to (BC) Biology and (BC) Botany

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
11 Tropism	612.014477 Geotropism, Action of mechanical forces, Influence of environment on cells and organisms, General physiology of cells and organisms, Physiology, Medicine	581.1832 Tropisms, Growth movements, Response of plants to stimuli, Plant physiology, Botany	G:559 Tropism, Ecology, Biology	+

Tropism (contd.)		574.18 Response to stimuli, Biophysiology, Biology	I:559 Tropism Ecology, Botany K:559 Tropism, Ecology, Zoology	+

Annotation - 1 In CC there is provision to provide the subject — tropism in (BC) Biology, Botany and Zoology. In DC ed 14 the subject was provided in the (BC) Medicine only. In DC ed 16 the subject has been given a place in (BC) Biology as well as (BC) Botany.

2 The change in DC is a helpful one. However, there is no reason why Zoology should be left out when a place has been given in the sister (BC) Botany.

3 DC ed 16 differs from CC in respect of the host class of Tropism. In CC it is Ecology. In DC it is Physiology. Ecology deals with the response of organism to the environmental factors. Gravitation, vibration, heat, radiation etc are all factors of environment. Thus making Ecology the host class appears to be appropriate.

4 Physiology deals with the normal function of the organs of an organism or of the organism as a whole. Response of organism to the varying factors of the environment cannot be taken as a part of physiology. If this is correct, tropism should be re-allocated by DC to Ecology.

32 Re-allocation from (BC) Engineering

(BC) Engineering has given away 8 classes to 4 different (BC). These new (BC) are Military Science, Medicine, Book Production, and Industrial Management.

321 Re-allocations to (BC) Military Science

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
1 Arsenals	623.47 Arsenals, Firearms, Ordnance & projectiles Arsenals, Military and Naval Engineering, Engineering	355.73. Artillery installations, military installations, Elements of warfare, Military science	MV41 Military science, Science of war	+
2 Naval target practice	623.554 Naval target practice, Sighting and firing, Gunnery, Military and naval engineering, Engineering	359.5 Training ~~manœuvers~~ and exercises, Naval forces, Military science	MV45 Naval science, Science of war	+

Annotation - 1 In CC the host class for both the above classes is Military Science. In DC ed 14 it was Military and Naval Engineering. DC ed 16 has shifted them to the (BC) Military Science.

2 This change in the (BC) is a happy one. DC ed 16 has tried to restrict the (BC) — 623 to engineering topics only, which is a move in the right direction. A note under 623.4 (=Ordnance) says, "Design, construction, repair of war weapons" are to be included under it. Hence the isolate 'arsenals' cannot remain here, and it has been moved to its right place. Similarly, the subject 623.5 (=Gunnery) has been rightly restricted to a study and application of ballistics in the firing of various types of guns. Hence, our second subject under consideration - Naval target practice, would have violated the Canon of Context if it was not shifted from here. It has been rightly moved to training maneuvers and exercises under Naval Forces.

322 Re-allocation to (BC) Medicine

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
3 Aviation medicine	629.13256 Medical aspects, Navigation & Aviation, Basic consideration, Aeronautics, Engineering	616.98021 Aviation medicine, Medical aspects of specialized services, Diseases due to physical and climatic conditions, Communicable and other diseases, Medicine, Medical sciences	L9T Aviation medicine, Medicine	+

Annotation - 1 In CC this class belongs to the (BC) Medicine. In DC ed 14 the host class for the subject Aviation Medicine was Aeronautics in the (BC) Engineering. But DC ed 16 has brought the class to the (BC) Medicine.

2 The change in the (BC) is a happy one. However, the place where it has been accomodated is not a very happy one. It has been put under 'Communicable and other diseases' (=616.9). Further, as there is already sufficient literary warrant in this subject, it would have to be subdivided, and those subdivisions would necessarily carry very long class numbers.

3 CC has made this class a Special in the (BC) Medicine. But apparently this class may also be taken to cover the human body as an Environmented Entity [R6]. But application of any of the Devices or Phase relation to accomodate a subject is to be taken only as a temporary provision. For this gives necessarily a clumsy and very often long class numbers. Hence for a subject in which there is already sufficient literary warrant this course should be avoided. It would be wiser to use the scheduled class number only. The following examples will bring out at the notational level the difference in the two methods:-

Subjects	Class number using scheduled isolate	Class number by treating the isolate as an Environmented Entity
1 Fatigue of high altitude flights	L9T:394	L(oD53):394
2 Effect of air flights on the functions of the respiratory system	L9T,4:3	L(oD53),4:3

323 Re-allocation to (BC) Book Production

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
4 Book binding	686 Book binding, Mechanic trades and Amateur manuals	655.7 Book binding, Printing-Publishing & book binding	M15 Book binding, Useful arts	+

Annotation - 1 In CC the class Book Binding is in the (BC) Book Production. In DC ed 14 the host class for the subject was Mechanic Trades. DC ed 16 has brought it to the (BC) Book Production (=655).

2 This conformity of DC ed 16 with CC is a happy one. Although, the change has brought the subject to its most helpful (BC), it has failed to secure for it the best filiatory position. A comparison of the DC ed 16 class numbers with that of CC in this respect is worth noticing. They are as follows:-

Subjects	CC	DC ed 16
1 Book Production	M1	655
2 Printing	M143	655.1-.3
3 Book Binding	M15	655.7
4 Publishing	M16	655.4-.5
5 Book Selling	M17	655.5

Undoubtedly, the former is a more helpful sequence. Book Binding should come before Publishing and Book Selling.

324 Re-allocations to (BC) Industrial Management

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
5 Accounting in automobile manufacture	629.2137 Accounting, Social and commercial aspects, Motor vehicles, Engineering	657.867 Manufacturing industries, Accounting systems in specific industries, Accounting, Business methods	X8(D5133):8F Accounts, Motor vehicle industry, Economics	+
6 Plant lay-out for automobile manufacture	629.2342 Factory building & layout, Manufacture, Construction, Motor vehicle, Engineering	658.23 Plant layout, Plant equipment & facilities Business & industrial management	X8(D5133):89L Layout, Motor vehicle industry, Economics	+
7 Personnel management for automobile industry	629.2343 Factory personnel, Production, Construction, Motor vehicle, Engineering	658.3 Personnel management, Business & industrial management	X8(D5133):9 Personnel management, Motor vehicle industry, Economics	+
8 Storage & Shipment in motor vehicles industry	629.2348 Storage-Crating-Shipment, Production, Motor vehicles, Engineering	658.78 Storage & Material Control, Procurement-Storage-Shipment, Business & industrial management	X8(D5133):4 Transport, Motor vehicle industry, Economics	+

Annotation - 1 The host class for all these classes is Industrial Management in CC. It was Engineering in DC ed 14. Now it has been made Industrial Management in DC ed 16.

2 This conformity of DC with CC is a happy one. The technique of these four subjects involve managerial principles so as to minimise wastage and maximise productivity. This arises out of the motive of top-management and the entrepreneur, though the entreprenaur as well as the engineer should work together to make the best out of it. This is why it is appropriate to use Management as the host class.

33 Re-allocation from (BC) Economics

5 re-allocations have been made from the (BC) Economics to three different (BC) — Home Economics, Amusement, and Sociology.

331 Re-allocations to (BC) Home Economics

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
1 Food for working class	331.834 Food, Material needs, Laboring classes, Labor and labourers, Economics	641 Food, Home Economics	X:963 Food, Employee services, Personnel management, Economics	x
2 Restaurants for working class	331.835 Restaurants - Cafeterias, Material needs, Labouring Classes, Labour and labourers, Economics	647.95 Restaurant management, Institutional household management, Household management, Home Economics	X:963,h Restaurant, Personnel management, Economics	x
3 Clothing for working class	331.836 Clothing, same as above	646 Management of clothing and personal appearance, Home Economics	X:9697 Clothing, Personnel management, Economics	x
4 Amusement for working class	331.84 Morals and habits, same as above	790.19 Recreation for specific classes, Recreation	X:967 Recreation, Labour, Economics	x

Annotation - 1 The (BC) for all the above four classes is Economics in CC. It was so in the DC ed 14. In DC ed 16 the first three classes have been shifted to the (BC) Home Economics and the fourth to the host class Recreation in the (BC) Fine Arts.

2 This move of DC is not a very happy one. For all the four classes may be considered from, at least, two different points of view. Take for example the subject "Restuarants for working class". Restuarant management, no doubt, belongs to the (BC) Useful Arts. Restuarants for working classes have certain special problems of their own. Even then this subject shall have to be accommodated in the (BC) Useful Arts with, of course, proper indication of the bias towards the working class. But the same subject may be considered from still another point of view. The employer is

interested in the provision and running of restuarant for working class, because it is known that wholesome food served at the working site would result in the saving of time and would keep up the morale of the working class and maintain efficiency. In fact all the services and amenities that are covered by the four classes are provided by the employer with the same motive. Hence, it is felt that the original places should have been retained.

3 In the re-allocated (BC) the subjects have not been given specific class numbers. In CC though first three subjects have not been scheduled yet their class numbers can be easily constructed by using mnemonic digits as shown in column 4 of the above table.

332 Re-allocation to (BC) Sociology

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
5 Work of settlement houses	331.85 Social settlements, labouring classes, labour and labourers, Economics	361.43 Work of settlement houses, social group work, Social work and social agencies, Social welfare	Y:4:66 Work house, Pathology, Sociology	+

Annotation - 1 In CC the class is in the (BC) Sociology. In DC ed 14 it was in the host class Labour Economics in the (BC) Economics. Now it has been shifted to the (BC) Sociology in DC ed 16.

2 This move of DC is a happy one. As provision of settlement or work houses is really a sort of relief work — relief against social destituion. The re-allocated place of the class brings out this connotation as can be seen from the chain in column 3 of the above table.

34 Re-allocation from (BC) Mathematics

There have been four re-allocations made from the (BC) Mathematics. Out of these four re-allocations, three are assigned to other Canonical Classes within Mathematics and one is assigned to the (BC) Physics.

341 Re-allocation to (BC) Analysis

3411 Continued Fraction

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
1 Continued fraction	512.4 Series - Fractions - Binomial theorem- Taylor's theorem, Algebra	517.21 Series, Differential Calculus, Calculus	B22 Continued fraction, Algebra	x

Annotation - 1 CC has assigned the class to the (BC) Algebra. In DC ed 14 it was in the (BC) Algebra but has now been shifted to the (BC) Analysis in the DC ed 16.

2 This move of DC is not a happy one. Although it is true that there are series both in Algebra and Calculus, yet there is a vast difference between the two types of series. It is also true that there can be a series of Continued Fraction but this series is in no way similar to the series occuring in Calculus like Taylor's series. The cause of this unhappy shift is traceable to the failure to recognize the subtle difference between Algebra and Calculus.

3 Infinite process and infinitesimal process are two different processes. Infinite processes are dealt with in Algebra. Infinitesimal processes lead to what is commonly known as Calculus.

4 Continued Fractions, as stated earlier, can form series and an infinite series at that. It does not, in any way, come under the purview of infinitesimal process. In other way, infinitesimal process is not applicable to Continued Fraction. Hence, the shift of Continued Fractions from Algebra at Calculus is not a happy change.

3412 Taylor's Theorem

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
2 Taylor's theorem	512.4 Series - Fractions - Binomial theorem - Taylor's theorem, Algebra	517.21 Series, Differential Calculus, Calculus	B36L Taylor's theorem, Series, Analysis, Mathematics	

Annotation - 1 In CC the class has been assigned to the (BC) Analysis. In DC ed 14 it was in the (BC) Algebra. In DC ed 16 it has been transferred to the (BC) Analysis.

2 This conformity of DC with CC is a happy one. In CC as well as in DC Taylor's Theorem has been placed under Series. The deciding factor in the assignment of the class either to Algebra or to Analysis is whether infinitesimal process is applicable to this type of series. It is known that Taylor's Theorem does make use of infinitesimal process. Hence the re-allocated position of the class is a more helpful one.

3413 Binomial Theorem

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
3 Binomial theorem	512.4 Binomial theorem, Algebra	517.21 Binomial theorem Series, Differential Calculus, Calculus	B2167 Binomial theorem, Progression, Algebra	+

Annotation - 1 In CC the class has been provided in the (BC) Algebra. In DC ed 14 it was in the (BC) Algebra but it has been shifted to the (BC) Analysis in DC ed 16.

2 First of all it may be said that the very need for a specific class number for Binomial Theorem is doubtful.

3 The shifting of the class from the (BC) Algebra to the (BC) Analysis is unhappy. As stated earlier Analysis embraces only those subjects that involve infinitesimal process. By no trace of imagination Binomial

Theorem can be said to use infinitesimal process. On the other hand Binomial Theorem can have an infinite series. But infinite series cannot become infinitesimal series in this particular case. Hence the class should not have been classed with Differential Series.

342 Re-allocation to (BC) Physics

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
4 Aurora	523.59 Zodiacal light-Aurora, Meteors & zodical light, Descriptive astronomy, Astronomy	538.768 Aurora, Luminous manifestations, Allied phenomena of overhead activation, Geomagnetism, Magnetism, Physics	B955 Zodiacal light, Meteor and Comet, Astronomy	x

Annotation - 1 The (BC) of Aurora is Astronomy in CC. It was so in DC ed 14 also. However, DC ed 16 has taken it the (BC) Physics.

2 This does not appear to be a happy change.. For the concrete phenomenon in the subject is Aurora. As a phenomenon it belongs to the (BC) Astronomy. But apart from the popular description of the presence of Aurora there is also literary warrant explaining its occurrence. This explanation uses the (BC) Physics as a tool. Physics is more abstract here than Astronomy. According to the Principle of Increasing Concreteness read along with the Principle of Inversion, the sequence in the result of the facet analysis should be — concrete, abstract as they appear in the class number. It is to meet this that the subject Astrophysics has been introduced in the Energy facet of the (BC) Astronomy in CC and in the schedule of DC — explicitly in ed 16 and implicitly by enumeration in ed 14.

35, Re-allocation from (BC) Physics

There are 4 re-allocations from this (BC). They have been given away to two different (BC) — Mechanics and Meteorology.

351 Re-allocation to (BC) Mechanics

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
1 Vortex rings	539.1 Vortex rings, Molecular structure, Molecular physics, Physics	532.595 Vortex rings and vortex motion, Waves and wave motion, Hydrodynamics, Mechanics of fluids	B75:3 Motion, liquid, Mechanics	+

Annotation - 1 The host class for the above subject is Hydrodynamics in CC. This belongs to (BC) Mechanics. In DC ed 14 this class was placed in Molecular Physics. In DC ed 16 it has been brought to Mechanics.

2 This conformity of DC with CC is a happy one.

352 Re-allocations to (BC) Meteorology

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
2 Atmosphere	533.3 Atmosphere, Gases & Pneumatics, Physics	551.51 Structure & mechanics of atmosphere, Meteorology & climatology	U28 Meteorology	+
3 Barometry	533.4 Barometer, Gases & Pneumatics, Physics	551.54 Atmospheric pressure, Meteorology & climatology	U282 Atmospheric pressure, Meteorology,	+
4 Atmospheric electricity	537.4 Atmospheric, Electricity, Physics	551.56 Atmospheric electricity, Meteorology & Climatology	U28626 Electrical phenomena, Meteorology	+

Annotation - 1 All the above three items concern the Terrestial Atmosphere. The host class for these items is Meteorology in CC. It was Physics in DC ed 14. It has now been made Meteorology in DC ed 16.

2 This move of DC towards CC is a happy one. For Physics is only a tool in the study of the Atmosphere. Relatively, Atmosphere is concrete and Physics is less concrete.

36 Re-allocation from (BC) Useful Arts

There have been four re-allocations made from the (BC) Useful Arts to four different (BC). They are Technology, Medicine, Literature, and Mathematical Geography.

361 Re-allocation to (BC) Technology

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
1 Celluloid manufacture	679 Celluloid and other, Manufactures	668.44 Plastics made from cellulose, Plastics and related resins, other organic products, Chemical technology (Industrial Chemistry)	F527 Celluloid, Plastics, Technology	+

Annotation - 1 In CC the host class for the above subject is Chemical Technology under the (BC) Technology. In DC ed 14 the subject was in the (BC) Useful Arts; but it has been shifted to (BC) Technology in ed 16. The Class 660 has been taken to correspond to the (BC) Technology.

2 This shifting in the (BC) brings on the surface a fundamental decision in the idea plane. This relates to the distinction between the technology and the manufacture of a product. The borderline between the technology and the manufacture of a commodity is not always clearcut and distinct. Hence it is necessary to fix some criterias with the help

which the production of a commodity may be assigned objectively either to the (BC) Technology or to the (BC) Useful Arts. There are some products where the processing of raw materials upto a certain stage and the fabrication of the final product from that processed raw material are entirely two different techniques. They are done in stages. Let us take the example of iron and steel manufacture. Here the treatment and processing of ores upto the production of pig iron or steel ingots is the first stage of production. In the second stage of production, pig iron or steel ingots are taken as the raw materials, which are fabricated into some useful forms and shapes. In this case the first stage, which is really the matallurgy of iron and steel, should be assigned to the (BC) Technology. The second stage which may be called the manufacture of iron and steel should be assigned to the (BC) Useful Arts. Both CC and DC fulfills this. On the other hand, there are commodities in the production of which the two stages of processing of raw materials and the fabrication of the final product are almost inseparable. Celluloid undoubtedly falls in this category of products. CC assigns the production of this type of commodities to the (BC) Technology. A perusal of the relevant portion of the schedules points out that DC also follows more or less this criteria in the assignment of subjects to these two (BC). The assignment of Celluloid Manufacture was the only exception of this principle. Hence this move of DC ed 16 is a happy one.

362 Re-allocation to (BC) Medicine

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
2 Setting and adjusting of optical instruments (Spectacles)	681.44 Setting and adjusting, Optical instruments, Precision instruments and apparatus, Mechanic trades	617.75 Optometry, opthalmology, Surgery, Medicine	MC5 Optician's Trade, Useful arts	x

Annotation - 1 The (BC) for the above class is Optician's Trade in CC. It was so in DC ed 14 but it has been made Optometry in the (BC) Medicine in DC ed 16.

2 This move of DC ed 16 is not a very happy one. On analysis, it can be seen that at least three parties are involved in the setting of a spectacle to an individual. On one side is the glass manufacturer who produces the lenses. He produces them without keeping is the Opthalmologist who prescribes the type of lenses to correct the defect in the eye-sight of an individual. It is the function of the Optician to adjust and set the lenses according to the individual needs as prescribed by the Ophthalmologist. But the present position of the subject shows that DC ed 16 has failed to recognise or has disregarded this distinctive function of the Optician, as his work has been subordinated to that of the Ophthalmologist.

363 Re-allocation to (BC) Literature

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
3 After dinner speeches and toasts	642.48 Toasts - Table anecdotes and conversation, Entertaining, Serving - Table entertaining, Home Economics	808.85 Collections, Speech and Public speaking, Literary composition (Rhetoric), Literature	0,5 Oration, Literature	+

Annotation - 1 CC has assigned the class to the (BC) Literature. In DC ed 14 the class was in the (BC) Home Economics; but it has been shifted to the (BC) Literature in DC ed 16.

2 This conformity of DC with CC is obviously a happy one. In fact one wonders as to what might have been the reasons for assigning the class to the (BC) Home Economics as was done in ed 14. Of course the subject refers to speeches made at dinner or similar occasions of entertainment. But, the nearness of the speaker to the kitchen, on such occasions, could not be taken as the deciding factor in assigning the subject to the (BC) Home Economics.

364 Re-allocation to the Host Class Mathematical Geography

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
4 Photogrammetry	778.38 Photogrammetry-photosurveying, Scientific photography, Applied Photography, Photography	526.982 Aerial surveying (Photogrammetry), Topographic surveying, Surveying, Mathematicsl geography	U18:(M95) Photogrammetry, Topographic-survey, Mathematical geography	+

Annotation - 1 The host class for Photogrammetry is Mathematical Geography in CC in the (BC) Geography. It was Photography in DC ed 14. It has now been made Mathematical Geography in DC ed 16 also.

2 So far as this particular subject is concerned the change is a happy one as the subject of the class does belong to Mathematical Geography and Photography serves only as a tool. The CC class number clearly lays bare this analysis. But this shifting in the (BC) of the subject is unhelpful in another way. DC has a separate class for Applied Photography (=778) where all the applications of Photography were so far accommodated. DC ed 16 has now scattered away at least one subject — Photogrammetry, from this class.

3 The CC and DC differs in respect of the (BC) to which Mathematical Geography has been assigned. CC assignes it in the (BC) Geography while DC assigns it to the (BC) Astronomy.

37 Re-allocation from (BC) Sociology

There have been 3 re-allocations made from the (BC) Sociology. They are assigned to the (BC) Linguistics, Literature, and Psychology.

371 Re-allocations to (BC) Linguistics and (BC) Literature

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
1 Romany language	397 Gypsies - Nomads, Customs - Constumes- Folklore	491.49 Other modern Indic languages, Modern Indic languages, other Indo-European languages, Language	P198 Romany language	+

2 Romany literature	397 same as above	891.49 Other modern Indic literatures, Modern Indic literatures, literatures of other Indo-European languages, Literature	O198 Romany, Literature	+

Annotation - 1 The CC assigns the above two subjects to the (BC) Linguistics and Literature respectively. In DC ed 14 both of them were in the (BC) Sociology. DC ed 16 has shifted them to the (BC) Lingustics and Literature respectively.

2 This move of DC is a happy one. Though one may doubt whether the above subjects have sufficient literary warrant to deserve separate isolate numbers but there cannot be any doubt that if they are to be scheduled, then they ought to be assigned to Lingustics and Literature. To put the language and literature of a race or ethnic group with the sociology of the group, as was done in DC ed 14, is not only unhelpful, it is almost negation of classification. This change has removed this fault of DC ed 14.

3 The CC class number has been constructed according to Rule 51 [R5]. The last digit '8' has been used as mnemonic for travel, as the Romany language is the language of a nomadic race.

372 Re-allocation to (BC) Psychology

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
3 Dream books	398.7 Dream books, Folklore - Proverbs, Customs - Costumes, Folklore	135.382 [Dream books], Popular interpretation of dreams, Interpretation of dreams, dreams, Sleep-dreams - Somnambulism, Psychology	S:811 Dream, Metapsychology, Psychology	+

Annotation - 1 The class is placed in the (BC) Psychology in CC. In DC ed 14 it was in the (BC) Sociology. Now it has been shifted to the (BC) Psychology in DC ed 16.

2 This move of DC is a happy one. The original class number brings into one's mind the eighteenth century European outlook on races and communities outside Europe. Intensively introvert nature of European outlook in that period tended to include many social and socio-psychological practices, including even interpretation of dreams, as if they were exclusively of primitive races. Perhaps that is the reason for the earlier editions of DC having put dream books along with Folklore, Proverbs etc. rather than with Dream in Psychology. The re-allocation under consideration has removed this fault.

38 Re-allocation from (BC) Chemistry

There have been two re-allocations from the (BC) Chemistry. Both of them have been assigned to the (BC) Physics.

381 Re-allocations to (BC) Physics

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
1 Rarefaction of gases	542.77 Rarefaction of gases, Gas manipulation, Practical and experimental chemistry, Chemistry	533.5 Vaccum production, Mechanics of gases, Physics	C28,762 Rarefaction, Gas, Properties of matter, Physics	+
2 Gas liquefaction and solidification of gases	542.79 Gas liquefaction and solidification, Gas manipulation, Practical and experimental chemistry, Chemistry	536.56 Cryogenics, Temperature, Heat, Physics	C4:551 Gas, Liquefaction, Change of state, Heat, Physics	+

Annotation - 1 In CC the subjects belong to two different host classes — 'Properties of Gas' and 'Heat', in the same (BC) Physics. In DC ed 14 the host class for both of them Practical and Experimental Chemistry in the (BC) Chemistry. Now they have been shifted to two different host classes — 'Mechanics of Gases' and 'Heat' respectively in the same (BC) Physics.

2 This conformity of DC with CC is a happy one. It is true that a Chemist has to work with instruments and apparatuses which use the principles and properties of rarefaction, liquefaction, solidification etc of gases. But the study of those principles are in the province of the Physicist. So, this move of DC is in the right direction. It may also be mentioned here that the class heading for 542.7 has been rightly changed from "Gas manipulation" in DC ed 14 to "Gas apparatus" in DC ed 16.

391 Re-allocation from (BC) Biology

There have been two re-allocations made from the (BC) Biology.

3911 Re-allocations to (BC) Botany and (BC) Zoology

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
1 Xenia	575.135 Xenia, Breeding-Heredity, Heredity-Eugenics, Evolution-Phylogeny, Biology	581.151 Xenia, Physiological aspects of variation in plants, Plant genetics, Plant Physiology, Botany	I, 1780r565 Pollen influencing seed, Botany	+
2 Telegony	575.136 Telegony, same as above	591.15 Telegony Animal genetics, Animal physiology, Zoology	(1) G:6 Genetics, Biology (2) K:6 Genetics, Zoology (3) KX:6 Breeding, Animal husbandary	+ +

Annotation - 1 In CC the first subject is in the (BC) Botany. The second subject can come in the (BC) Biology, Zoology, and Animal Husbandry. DC ed 14 had placed both the isolates in the (BC) Biology. Now they have been moved to two different (BC) — Botany and Zoology respectively.

2 This move of DC is a happy one. Xenia means "The direct influence of pollen upon the seed in the cross-pollination of certain plants ..." Hence the subject should be assinged to the (BC) Botany.

3 Similarly, Telegony is a subject of Animal Genetics. Hence, shifting of the isolate from the (BC) Biology to (BC) Zoology is a move in the right direction. However, it would have been better if a place was given for the subject in the (BC) Animal Husbandry also.

392 Re-allocation from (BC) Philosophy

There are only two re-allocations made from this (BC). One of them has been moved to the (BC) Religion and the other to the (BC) Journalism.

3921 Re-allocation to (BC) Religion

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
1 Cabala	181.3 Kabala, Jewish philosophers, Oriental Philisophers, Ancient and Oriental Philisophers, Philosophy	296.16 Cabala, Sources of Judaism, Judaism, Other religions, Religion	Δ 5 Judaic, Mysticism	

Annotation - 1 In CC the class has been assigned to the (BC) Mysticism. In DC ed 14 it was in the (BC) Philosophy. DC ed 16 has shifted it to the (BC) Religion.

2 Cabala stands for mysticism as viewed from Judaism as the root. In CC there is a separate (BC) for Mysticism and Δ 5 stands for Cabala even as Q5 stands for Judaism. In DC the transfer of Cabala from Jewish philosophy to Jewish Theology does not fully satisfy the requirement of the case. However, the transfer is helpful as there is no separate (BC) for Mysticism in DC.

3922 Re-allocation to (BC) Journalism

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
2 Ethics of the press	179.1 Morals of the Press, Other ethical topics, Ethics, Philosophy	070.11 Ethics of the press, Press, Newspaper Journalism	R44(4) Journalism, Ethics, Philosophy	x

Annotation - 1 The host class for the subject is Ethics in CC. It was so in DC ed 14 also. But DC ed 16 has moved it to the (BC) Journalism.

2 Though DC ed 16 does not conform to CC yet this is a happy change. DC has adopted the principle to class ethics of a profession with the profession itself and to class works on general professional and business ethics in 174. This move is in the right direction. Just as the law of a subject is classed with the subject, in the same way the ethics of a profession should be classed with the profession.

3 It can be seen that the CC does not follow the above principle. But even if it is desired to follow this principle, the versatility of the CC notation would permit it to carry out the decision at the notational level. In that case the class number for this particular isolate would be 4:(R44).

393 Re-allocation from (BC) Psychology

There have been two re-allocations made from the (BC) Psychology. One is given away to the (BC) Literature and the other to the (BC) Religion.

3931 Re-allocation to (BC) Literature

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
1 Delineation of children in literature	136.758 Delineation of children in literature, Mental characteristics, Psychology	809.93 Treatment of children of nature, Special aspects of literary criticism, Literature	O:g(S1) Children, Criticism, Literature	+

Annotation - 1 The subject comes under the host class Literary Criticism in the (BC) Literature in CC. It was in the (BC) Psychology in DC ed 14. Now it has been shifted to the host class Literary Criticism in the (BC) Literature in DC ed 16.

2 This conformity of DC with CC is a happy one. The subject under study really belongs to Literary Criticism. Delineation of children is only the aspect studied or an angle of approach for the critical study of a particular literature or literature in general.

3932 Re-allocation to (BC) Religion

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
2 New thought	131.324 New thought, Mental hygiene, Psychology	289.9 New thought, Christian sects, Religion	Q68[CD] Other Christian sect, Christianity, Religion	+

Annotation - 1 The class has to be assigned to the (BC) Religion in the CC. In DC ed 14 it was in the (BC) Psychology but now it has been transferred to the (BC) Religion in DC ed 16.

2 If the class meant only new ~~bel~~ beliefs or new sects within Christianity, as interpreted by the present editors, then the transfer of the subject from the (BC) Psychology to the BC (Religion) is a happy move.

394 Re-allocation from (BC) Education

There have been two re-allocations made from the (BC) Education. One has been given away to the (BC) Engineering and the other to the (BC) Museum.

3941 Re-allocation to (BC) Engineering

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
1 Fireproofing of school buildings	371.6278 Fire proofing, School premises, Education	693.82 Fire proofing, School buildings, Engineering	D3(T2), 994 Fireproofing, School building, Engineering	+

Annotation - 1 In CC the class is in the (BC) Engineering. It was in the (BC) Education in DC ed 14 but has now been transferred to the (BC) Engineering in DC ed 16.

2 This move is obviously a happy one. There can be literary warrant on only the engineering aspects of fireproofing of school buildings. Hence the Engineer is more concerned with the subject. The Educationist is interested only in getting a school building fireproofed.

3942 Re-allocation to (BC) Museum

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
2 School museum	371.65 Museums, School premises and equipment, Education	069 Museums	T2, (6) Museum, School, Education	x

Annotation - 1 In CC the subject should be in the (BC) Education. In DC ed 14 it was in the (BC) Education but has now been shifted to the (BC) Museum.

2 Just as school library is accommodated in the (BC) Library Science, School Museum should be accommodated in the (BC) Museum. By transferring the subject to the (BC) Museum, DC has taken a step in the right direction.

395 Re-allocation from Geology y

There has been only one re-allocation made from Geology. The transfer is from one Canonical Class to another within the Main Class Geology.

3951 Re-allocation to (BC) Petrology

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
1 Metamorphism	551.6 Metamorphism, Physical and dynamic geology	552.4 Metamorphism, Metamorphic rocks, Petrology	H34 Metamorphism, Structural geology	x

Annotation - 1 In CC the subject is in the (BC) Structural Geology. In DC ed 14 it was in the (BC) Physical and Dynamic Geology which included Structural Geology also. The class has now been transferred to the (BC) Petrology.

2. This move of DC is an unhappy one. In its new place Metamorphism has not even been given a separate class number. It has just been made to share the same class number which represents Metamorphic rocks. It is true that metamorphic rocks are formed by the process of metamorphism but the study of Metamorphism as a stratigraphic process requires a separate place. DC ed 14 had correctly provided separate place for both of them. CC has also provided separate places for them. By clubbing together these two classes into one, DC ed 16 has taken a retrograde step.

396 Re-allocation from (BC) Mining

There has been only one re-allocation made from the (BC) Mining. The transfer is to the (BC) Technology.

3961 Re-allocation to (BC) Technology

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
1 Coal washing	622.78 Coal washing, Ore dressing, Mining Engineering	662.623 Mechanical treatment of coal, Coal Technology, Fuel Technology, Explosives, Fuels, Chemical technology	HX 551:28 Washing, Ore dressing, Coal, Mining	x

Annotation - 1 In CC the class is in the (BC) Mining. It was so in DC ed 14. But it has now been transferred to the host class Coal Technology in the (BC) Technology.

2 This move of DC is not a very happy one. Washing and other dressing operations are all mechanical treatments of ores. All these operations are provided in the (BC) Mining. But DC ed 16 has opened a new class in 662.623 as Mechanical treatment of coal. When the mechanical treatments of all other ores are accommodated in the (BC) Mining the shifting of this subject — mechanical treatment of coal including washing, from the (BC) Mining to the (BC) Coal Technology cannot be justified.

397 Re-allocation from (BC) Agriculture

There has been only one re-allocation made from this (BC). The transfer has been made to the (BC) Animal Husbandry.

3971 Re-allocation to (BC) Animal Husbandry

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
1 Implements for care of farm animals	631.38 Implements for care of farm animals, Farm machinery & equipments, Farm-Farmsted, Agriculture	636.083 Shelter —care — protection of livestock, Animal Husbandry	KX2:5e Implement, Hygiene, Cattle, Animal Husbandry	+

Annotation - 1 In CC the class has been assigned to the (BC) Animal Husbandry. In DC ed 14 it was in the (BC) Agriculture. In DC ed 16 it has been shifted to the (BC) Animal Husbandry.

2 This move of DC is a happy one. For obvious reasons, implements for the care of animals should be classed under 'care of animals' rather than placing them along with 'general farm mechinery and equipments'. The former is a more helpful place.

3981 Re-allocation to (BC) Biology

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
1 Aquariums	590.74 Aquarium, Zoology	574.92074 Aquarium, Marine biology, Natural history and biogeography, Biology	G995,f2 Aquarium, Hydrobiology, Biology	+

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ABBREVIATION USED

illus = illustrated
irt = in relation to
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398 Re-allocation from (BC) Zoology

(BC) Zoology has given away only one of its class to the (BC) Biology.

Annotation - 1 The class is to be assigned to the (BC) Biology in CC. In DC ed 14 it was in the (BC) Zoology. DC ed 16 has moved it to the (BC) Biology.

2 So far as the change in the (BC) is concerned it is a happy one. Because in aquariums aquatic animals as well as plants are kept. So the (BC) Biology is a better place for the class. But in its new place in the (BC) Biology the class has been subordinated to Marine Biology. This is unhappy, because, Aquarium includes not only marine lives but all aquatic animals and plants.

3991 Re-allocation from (BC) Political Science

There has been only one re-allocation made from this class. The transfer is to the (BC) Sociology.

39911 Re-allocation to (BC) Sociology

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
1 Criminal investigation	351.74 [Criminal investigation], Police measures, Administration of central government	364.12 Criminal investigation and identification, Criminology	Y:45:61 Detection, Crime, Sociology	+

Annotation - 1 In CC the subject has been assigned in the (BC) Sociology. DC ed 14 had placed it in the host class Administration in the (BC) Political Science, according to the editors of DC ed 16. DC ed 16 has shifted it to the (BC) Sociology.

2 In fact there was no specific place for the class in the DC ed 14. There is even no mention of this class in the Relative Index. But the editors of the DC ed 16 interpret that its class number was 351.74 as shown in column 2 of the above table. However, the subject has now been assigned a distinct class number in the (BC) Sociology. The new (BC) in DC conforms to that in CC.

4 CONCENTRATION IN ONE (BC)

While studying the re-allocations in DC ed 16 from DC ed 14 with regard to (BC) 87 cases of concentration were noticed. By concentration is meant that out of the two class numbers provided under different (BC) in ed 14, for one and the same subject, only one class number is retained in ed 16. The other class number is abandoned. Synonym which is fatal to library classification has been avoided thereby. If a classification scheme provides alternate class numbers for a subject, the classifier will be led to scatter the documents in one and the same subject under different class numbers. The result will be chaos and confusion. The concentration in (BC) brought about in the 87 cases is therefore a move in the right direction. However in order to examine how the concentration is brought about and whether the class number retained in ed 16 is helpful or not, the practice of CC is mentioned. The result is presented in a tabular form in the accompanying table (Sec 41).

S No	Subject	Class number in CC with chain	Class number in DC ed 16 with chain	Class numbers in DC ed 14 with chains I	 II	Remarks
1	2	3	4	5	6	7
1	List for elementary and high school reading	a811,7 Reading list, Children, Bibliography	028.52 Bibliography and list of children's books, Reading, Library science	028.5 Reading of young, Reading, Library economy	371.643 School reading list, list, Libraries, Education	-
2	School libraries	232 Secondary school, Library science	027.82 School libraries, General libraries, Library science	027.82 School libraries, General libraries, Library economy	371.64 Libraries, Education	+
3	Proportion	B215 Proportion, Algebra	511.6 Proportion, Arithmetic	511.6 Proportion, Arithmetic	512.6 Proportion, Algebra	x
4	Progression	B216 Progression, Algebra	512.6 Progression, Algebra	511.6 Progression, Arithmetic	512.6 Progression, Algebra	+
5	Permutation & combination	B217 Permutation and combination, Algebra	512.5 Combinatory analysis including permutation and combination, Algebra	511.5 Permutation and combination, Arithmetic	512.5 Combinatory analysis, Algebra	+
6	Complex variables	B38 Complex variables, Analysis	517.8 Functions of Complex variables, Calculus	512.82 Complex variables, Algebra	517.8 Complex variables, Calculus	+
7	Gravitation	C138 Gravitation, Physics	521.12 Law of universal gravitation and motion, Theoretical astronomy, Astronomy	521.12 Law of universal gravitation and motion, Theoretical astronomy, Astronomy	531.51 Law of universal gravitation, Mechanics, Gravity, Physics	x
8	Properties of solids	C21 Solid, Properties, Physics	531.7 Properties of solids, Mechanics of solids, Physics	539.2 Properties of solids, Molecular Physics, Physics	541.31 Solid state, Physical Chemistry Chemistry	+
9	Properties of liquids	C25 Liquid, Properties, Physics	532.1 Mechanics of liquids, (including properties), Physics	532.1 Properties of liquids, Hydrostatics, Physics	541.32 Liquid state, Physical chemistry, Chemistry	+
10	Properties of gases	C28 Gas, Properties, Physics	533.1 Properties of gases, Mechanics of gases, Physics	533.1 Properties of gases, Gases, Physics	541.33 Gaseous state, Physical Chemistry	+
11	Building law	D2:(Z) Law, Building, Engineering	692.9 Building laws, Building construction	614.85 Building laws, Protection of human life, Public health, Medicine	692.9 Building laws, Building	+
12	Apparatus for communication engineering	D65,4-8 Machinery, Communication, Electronics, Engineering	621.382-.389 Communication engineering including manufacture of apparatus, Electronic engineering, Electrical engineering, Engineering	621.382-.389 Instruments — telegraph, telephone wireless, Electrical Communication, Electrical engineering, Engineering	681.63 Apparatus for telecommunication, Fine mechanism, Mechanic trades	+
13	Combustion	E:2131 Combustion, Physical Chemistry, Chemistry	541.36 Thermochemistry including combustion, Physical chemistry, Chemistry	536.46 Combustion, Heat, Physics	541.39 Combustion, Physical chemistry	+
14	Oleomargarines	F943 Edible oil, Technology	664.32 Oleomargarines, Food technology, Chemical technology	637.281 Oleomargarine, Dairy products, Livestock	664.3 Oleomargarine, Food, Chemical technology	+

1	2	3	4	5	6	7
15	Biophysiology	G:3 Physiology, Biology	574.1 Biophysiology, Biology	574.1 Physiology, Biology	612.014 General physiology of cells and organisms, Physiology, Medicine	+
16	Cytology	G11 Cytology, Biology	574.87 Cytology, Microscopic biology, Biology	574.87 Cytology, Biology	612.0141-612.0143 Cytology, Physiology, Medicine	+
17	Meteorites	H25 Meteorites, Petrology	523.51 Meteorites, Descriptive astronomy, Astronomy	523.51 Meteorites, Descriptive astronomy, Astronomy	552.6 Meteorites, Petrology	x
18	Geologic agents	H42 Epigene or superficial action, Dynamic geology	551.3 (Weathering), Geological agents, Geophysics	551.9 Agents of geological work, Physical and dynamic geology	552.7 Decay of rocks, Petrology	+
19	Guano	J:22 Farm manure, Agriculture	631.86 Animal manure including guano, Fertilizers, Farm, Agriculture	553.64 Guano, Economic geology	631.854 Guano, Fertilizers, Farm, Agriculture	+
20	Weeds	J:48 Weeds, Agriculture	632.58 Weeds, Plant injuries, Agriculture	581.65 Weeds, Economic botany, Botany	632.58 Weeds, Protection, Agriculture	+
21	Forest ecology	JX:95 Ecology, Forestry	634.94 Forest ecology, Forestry	581.526.42 Forest formation, Ecology, Botany	634.94 Forest botany, Forestry	+
22	Forest climate	JX:9587 Climate, Forestry	634.94 Forest ecology including climate, Forestry	551.58 Forest, Meteorology	634.9476 Climatic effects, Forest botany, Forestry	+
23	Hibernation	K:5567 Winter, Ecology, Zoology	591.543 Hibernation, Ecology, Zoological sciences	591.54 Hibernation, Physiologic zoology, Zoology	612.58 Hibernating animals, Animal heat, Physiology	+
24	Veterinary hygiene	KX:5 Hygiene, Animal husbandry	636.0894 Veterinary public health, Livestock	614.9 Hygiene of animals, Public health, Medicine	636.0893 Hygiene, Domestic animals	+
25	Harnesses and accessories	KX2:7;57 Harness, Livestock	636.0837 Care of harnesses and accessories, Livestock	631.374 Harness, Agriculture	636.0837 Care of harnesses and accessories, Domestic animals	+
26	Ambulance service	L:4:94 Ambulance, Disease, Medicine	362.18 Ambulance service, Welfare service, Sociel welfare	362.18 City ambulances, Hospital, Welfare institutions	614.881-.883 Ambulance, Protection of human life from accidents, Public health, Medicine	x
27	Vital statistics	L:51 Vital Statistics, Public health, Medicine	312 Demography including vital statistics, Statistics, Social sciences	312 Vital statistics, Demography, Statistics, Social sciences	614.1 Vital statistics, Public health Medicine	x
28	Physiology of ear	L183:3 Physiology, Ear, Medicine	612.85 Physiological audition, Nervous system, Physiology, Medicine	534.7 Physiologic ear, Sound, Physics	612.85 Hearing, Nervous system, Physiology, Medicine	+
29	Physiology of eye	L185:3 Physiology, Eye, Medicine	612.84 Physiologic optics, Physiology, Nervous system, Medicine	535.7 Physiologic eye, Optics, Physics	612.84 Physiologic optics, Nervous system, Physiology, Medicine	+

1	2	3	4	5	6	7
30	Physiology of larynx	L42:3 Physiology, Larynx, Medicine	612.78 Physiology of larynx, Nervous system, Physiology, Medicine	534.7 Physiologic larynx, Sound, Physics	612.78 Vioce and speech, Nervous system, Physiology, Medicine	+
31	Monstrosities	L9F, 32:471 Abnormality, Female medicine, Medicine	611.012 Human teratology, Anatomy, Medicine	573.9 Monstrosities, Natural history of name, Biology	611.012 Teratology, Anatomy, Medicine	+
32	Industrial hygiene	L9X:5 Hygiene, Industrial medicine, Medicine	311.82 Industrial hygiene, Industrial sociology, Labour, Economics	331.82 Working conditions, Labouring classes, Labour, Economics	613.61-.66 Hygiene of employment, Hygiene, Medicine	x
33	Drugs affecting heart	LX3:132 Heart, General effects, Pharmacology	615.71 Drugs affecting cardiovascular system, Pharmoco-dynamics	612.174 Effect of toxin on heart, Physiology, Medicine	615.71 Drugs acting on circulatory system, Therapeutics, Medicine	+
34	Lamps	M3, 83(C5) Lamp, Domestic science	644.3 Lamps, Home economics	644.3 System of lighting, Home economics	665.6 Lamps, Oil, Technology	+
35	Knitting	M74:4 Knitting, Textiles, Useful Arts	746.43 Knitting, Crocheting, Tatting, Textile handicrafts, Decorative art	646.26-.27 Knitting, Crochet, Tatting, Clothing, Home economics	746.43 Knitting, Crochet, Tatting, Fancy work, Decoration	x
36	Traffic regulation	MX411 Traffic regulation, Road, Useful Arts	388.312 Traffic regulation, Highway transportation, Public services	388.3 Land transportation, Commerce	629.21343 Traffic regulation, Motor-vehicles, Engineering	-
37	Gymnastics	MY11 Calisthenics, Physical training, Useful Arts	796.41 Calisthenics, Gymnastics, Athletic games, Recreation	613.71 Gymnastics, Hygiene of recreation, Hygiene	796.4 Gymnastics, Athletic games, Amusements	+
38	Divining rod	Δ(H7:15) Prospecting, Occult science	133.323 Divining rods, Occult sciences	133.323 Divining rod, Occult sciences	622.12 Prospecting including divining rods, Mining engineering	+
39	Occult sciences	Δ:8 Occultism, Mysticism	133 Occult sciences, Branches of psychology	133 Occult sciences, Metapsychology	149.3 Occultism, Philosophy	+
40.	Wall hanging	NA, 2, 41-99 Decoration, Wall, Architecture	747.3 Hangings, Wall decoration, Decorative art	698.7 Textile hanging, Painting, Building	747.3 Wall, Interior decoration, Decoration	+
41	Decoration in relief	NA, 2, 992 Decoration in relief, Building, Architecture	729.5 Decoration in relief, Architecture design,	698.8 Relief work, Painting, Building	729.5 Decoration in relief, Architectural design, Archicture	+
42	City planning	NB, 5 City, Town Planning	711.4 City planning, Area planning	614.781 Laying out of town and street, Hygiene of air and ground, Public health	711.4 Localities, Regional and city planning	+
43	Park	NB, 5, 66 Park, Town planning	711.558 Parks, City planning, Area planning	614.783 Parks, Hygiene of air and ground, Public health	711.558 Recreational areas, City planning, Area planning	+
44	**Railroad**	NB, 8, 9(D415) Railroad, Town planning	711.75 Subways and elevated ways, Transportation, Area planning	614.782 Subways and elevated ways, Hygiene of air and ground, Public health	711.75 Railroads, Transportation, Regional and city planning	+

1	2	3	4	5	6	7
45	Children iconography	ND, 191 Childrens' figure, Sculpture, Fine Arts e, Fine Arts	704.9425 Children, Human figure in art, Fine Arts	136.757 Art, Delineation of children, Child psychology, Psychology	704.9425 Children Iconography Fine arts	+
46	Theosophy	QM Theosophy, Religion	212.5 Theosophy, Pantheism, Natural theology, Religion	149.3 Theosophy, Philosophical systems, Philosophy	212 Theosophy, Natural theology, Religion	+
47	Morals of working class	R44(X:9) Labour, Ethics	174 Occupations including morals of working class, Ethics	174 Professional and business ethics, Ethics	331.84 Morals and habits, Labouring class, Labour, Economics	+
48	Sense	S:2 Sense, Psychology	152 Sensation, Psychology	152 Sensation, Psychology	612.8218 Sense in general, Nervous system, Physiology, Medicine	+
49	Psychophysics	S:2:5 Psychophysics, Psychology	152.8 Psychophysics, Sensation, Psychology	152.8 Psychophysics, Senation, Psychology	612.82188 Psychophysical laws, Sense, Nervous system, Physiology, Medicine	+
50	Psychometry	S:2:6 Psychometry, Psychology	152.83 Reaction-time studies, Psychophysics, Sensation, Psychology	152.83 Psychometry, Psychophysics, Psychology	612.8211 Psychometry, Physiologic psychology, Nervous system, Physiology, Medicine	+
51	Hearing	S:23 Hearing, Psychology	152.2 Auditory sensation, Sensation and perception, Psychology	152.2 Hearing, Sensation, Psychology	612.8587-.85876 Acoustic perception, Hearing, Nervous system, Medicine	+
52	Tests of auditory perception	S:23:4:3 Symptoms and diagnosis, Hearing, Psychology	152.28 Tests of auditory perception, Sensation, Psychology	152.28 Internal ear, Hearing, Sensation, Psychology	612.85878 Tests of auditory perception, Hearing, Nervous system, Physiology, Medicine	+
53	Olfactory sensation and perception	S:24 Smell, Psychology	152.3 Olfactory sensation, Sensation, Psychology	152.3 Olfactory sensation, Sensation, Psychology	612.867 Perception, Nervous system, Physiology, Medicine,	+
54	Tests of olfactory sensation	S:241:g Test, Smell, Psychology	152.37 Tests of olfactory perception, Sensation, Psychology	152.37 Olfactory perception, Sensation Psychology .	612.8678 Tests of olfactory perception, Nervous system, Physiology, Medicine	+
55	Sight	S:25 Sight, Psychology	152.1 Visual sensation, Sensation, Psychology	152.1 Visual sensation Sensation, Psychology	612.8433-.8437 Colour sense, Nervous system Physiology, Medicine	+
56	Binocular vision	S:25 Sight, Psychology	152.1 Visual sensation and perception including binocular phenomena, Sensation, Psychology	152.1 Visual sensation, Sensation, Psychology	612.8462 Field of vision, Nervous system, Physiology Medicine	+
57	Proprioceptive sensation	S:27 Touch, Psychology	152.6 Proprioceptive sensation and perception, Sensation, Psychology	152.6 Muscular, articular and organic senses, Sensation, Psychology	612.885 Muscular sense, Nervous system, Physiology, Medicine	+

1	2	3	4	5	6	7
58	Cutaneous sensation	S:28 Cutaneous sense, Psychology	152.5 Cutaneous sensation and perception, Psychology	152.5 Cutaneous senses, Sensation, Psychology	612.882-.884 Sense of temperature, pressure and pain, Nervous system, Physiology, Medicine	+
59	Orientational sense	S:296 Direction sense, Psychology	152.6 Proprioceptive sensation, Psychology	152.6 Muscular, articular and organic senses, Sensation, Psychology	612.8861 Sense of direction and orientation, Nervous system, Physiology, Medicine	+
60	Attention	S:31 Attention, Psychology	152.723 Attention, Sensation, Psychology	152.723 Attention, Perception, Sensation, Psychology	612.8212 Attention, Physiologic psychology, Nervous system, Medicine	+
61	Habit	S:35 Habit, Psychology	158.43 Habit, Conation, Psychology	158.43 Habit, Conation, Psychology	612.82134 Habit, Physiologic psychology, Nervous system, Medicine	+
62	Association of idea	S:4 Cognition, Psychology	153.2 Association of idaes, Cognition, Psychology	153.2 Association, Cognition, Psychology	612.8212 Association, Physiologic psychology, Nervous system, Medicine	+
63	Memory	S:43 Memory, Psychology	154 Memory, Psychology	154 Memory, Psychology	612.8212 Memory, Physiologic psychology, Nervous system, Medicine	+
64	Imagination	S:43 Imagination, Psychology	155 Imagination Psychology	155 Imagination, Psychology	612.8212 Imagination, Physiologic psychology, Nervous system, Medicine	+
65	Normal illusion	S:46 Normal illusion, Cognition, Psychology	152.73 Normal illusions, Perception, Sensation, Psychology	152.73 Normal illusions, Perception, Sensation, Psychology	612.82189 Sensory delusions, Physiologic psychology, Nervous syteem, Medicine	+
66	Sensibility	S:5 Feeling, Psychology	157.5 Sensibility, Emotion, Psychology	157.5 Properties of sensibility, Emotion, Psychology	612.8213 Sensibility, Physiologic psychology, Nervous system, Medicine	+
67	Emotion	S:52 Emotion, Psychology	157 Emotion, Psychology	157 Emotion, Psychology	612.8213 Emotion, Physiologic psychology, Nervous system, Medicine	+
68	Motivation	S:61 Dynamo-genesis, Psychology	159.4 Motivation, Volition, Psychology	159.4 Motives, Volition, Psychology	612.82134 Will, Physiologic psychology, Nervous system, Medicine	+
69	Instinct	S:62 Instinct, Psychology	158.424 Instinct, Movement, Psychology	158.424 Instinct, Movement, Psychology	612.8213 Instinct, Physiologic psychology, Nervous system, Medicine	+
70	Reflex	S:63 Reflex action, Movement, Psychology	158.423 Reflexes, Movement, Psychology	158.423 Reflexes, Movement, Psychology	612.8216 Psychic reflexes, Physiologic psychology, Nervous system, Medicine	+

1	2	3	4	5	6	7
71	Will(Voluntary movement)	S:65 Volition, Psychology	159.2 Will, Volition, Psychology	159.2 Voluntary human action, Will Psychology	612.82134 Will, Physiologic psychology, Nervous system, Medicine	+
72	Intelligence	S:72 Intelligence, Personality, Psychology	151 Intelligence, Psychology	151 Intellect, Psychology	612.8213 Intelligence, Physiologic psychology, Nervous system, Medicine	+
73	Gang	S8 Social psychology	301.158 Gang, Social psychology, Sociology	136.77 Gang, Child psychology, Philosophy	301.158 Special groups, Social psychology, Sociology	+
74	Hypnotism	S:851 Hypnotism, Psychology	134 Hypnotism, Psychology	134 Hypnotism, Psychology	612.82171 Hypnotism, Physiologic psychology, Nervous sytem, Medicine	+
75	Comparative psychology	S9 Animal psychology	151.3 Comparative psychology, Psychology	151.3 Comparative psychology, Intellect, Psychology	612.82131 Comparative psychology, Physiologic psychology, Nervous system, Medicine	+
76	Freedom of teaching	T4:(W:5) Freedom, University Education	378.121 Freedom of teaching including academic freedom, Higher eduction, Education	323.444 Academic freedom, Internal relations, Political science,	378.121 Freedom of teaching, Colleges and universities, Education	+
77	Education of labouring class	T9(X:9) Labouring class, Education	374 Adult education, Education	331.85 Education, Labouring class, Labour, Economics	374 Adult education, Education	+
78	Cartography	U12 Map projection, Mathematical geography, Geography	526.8 Map projection, Mathematical geography, Astronomy	526.8 Map projection, Geodesy, Astronomy	744.428 Map drawing, Mathematical and scientific drawing, Drawing	+
79	Freedom of press	W:57 Freedom of Press, Civil right, Political science	323.445 Freedom of Press, Liberty, Individual right, Political science	070.13 Liberty of the press, Utility, Journalism	323.445 Freedom of press, Liberty, Internal relations, Political science	+
80	Airways	X43 Air Transport, Economics	387.72 Airways, Air transportation, Public services	387.7 Air transport, Commerce	629.13253 Airways, Aeronautics, Engineering	+
81	Forest economics	X8(JX) Forest economics, Economics	634.92 Forest economics, Forestry	333.75 Forest, Land economics	634.92 Economics, Forestry	x
82	Industrial safety	X8:94 Safety measure, Industry, Economics	331.823 Industrial accidents including safety measures, Industrial sociology, Labour, Economics	331.823 Safety, Labouring classes, Labour, Economics	614.85 Industrial safety, Protection from accident, Public health, Medicine	+
83	Automobile liability insurance	X8194(D513) Automobile, Liability, Insurance, Economics	368.572 Automobile liability insurance, Insurance, Social welfare	368.5 Casualty insurance, Insurance, Welfare institution	629.21363 Insurance, Accidents, Motor vehicles, Engineering	+

1	2	3	4	5	6	7
84	Eugenics	Y:4:5(G) Eugenics, Sociology	613.94 Eugenics, Heriditary factors, Medicine	575.1 Eugenics, Evolution, Biology	613.94 Eugenics, Hygiene of off-spring, Medicine	-
85	Institution for aged	Y13:4:65 Asylum, Old-age, Sociology	362.61 Institution for aged, Social welfare	331.256 Homes for aged, Labour, Economics	362.61 Homes for aged, Social welfare	+
86	Testimony	Z,94 Evidence, Law	347.94 Evidence including testimony, Treatises, Law	347.94 Evidence including testimony, Treatises, Law	519.3 Testimony, Probabilities	+
87	Consular service	Z1,145 Diplomatic staff, International, Law	341.8 Consular service, International law, Law	341.8 Consular system, International law, Law	382.2 Consultates, Foreign trade, Commerce	+

42 Annotations on Concentrations

Annotation - 1 Of the 87 cases of concentration 76 have preferred the same (BC) as CC. The other 11 cases have chosen (BC) different from that of CC. Moreover in 8 cases of the later, one of the (BC) in ed 14 was same as in CC but in ed 16 it is abandoned and the other is chosen. The remaining 3 cases have entirely different (BC) both in ed 14 and in ed 16 from that of CC.

2 In (BC) Psychology alone 28 cases of concentration were noticed. The reason is that the alternate class numbers provided in ed 14 for several of the subjects under Nervous system, Physiology in (BC) Medicine are abandoned in ed 16 and the class numbers under the more appropriate (BC) Psychology are only retained.

Annotation for item 1 - The subject 'Reading list' was provided for both under Library Science and Education in ed 14. In ed 16 the (BC) Library Science is only retained. However, in CC there is a separate (BC) for 'Bibliography' which is by far the most appropriate place to class the subject 'Reading list'.

Annotation for item 3 - 'Proportion' was given both under Arithmetic and Algebra in ed 14. In ed 16 only Arithmetic is retained. According to CC 'Proportion' comes under Algebra. Proportion is statement of equality between two ratios'. It is expressed in symbols. Since Algebra deals with symbols, the more appropriate place is Algebra rather than Arithmetic. DC has therefore chosen a less appropriate class number for concentration in its ed 16.

Annotation for item 7 - 'Gravitation' is a fundamental concept in Physics. It is no doubt used in Astronomy when studied from the point of view of mechanics.

Annotation for item 16 - 'Cytology' can be combined with Biology, Botany, Agriculture, Zoology, Animal Husbandry and Medicine. The combination with Biology is preferred only when the study is of a general nature. Otherwise, the combination should be with appropriate (BC). CC provides for this. The concentration of the subject in (BC) Biology in ed 16 appears to be a wrong step.

Annotation for item 17 - 'Meteorites' was given both under Descriptive Astronomy and Petrology in ed 14. In ed 16 only Descriptive Astronomy is retained. Meteorites means stoney or metallic body that has fallen to the earth from outer space. It can not be therefore classed under 'Meteor' in Astronomy. 'Meteor' which is the source for 'Meteorites' is classed in Astronomy in CC. The CC number is B951.

Annotation for item 26 - In CC 'Ambulance' has a class number in (BC) Medicine. DC ed 14 had given it a class number both in (BC) Medicine and in (BC) Social Welfare. But ed 16 has abandoned the number in the (BC) Medicine and retained the number in the (BC) Social Welfare. In this respect it differs from CC.

Annotation for item 27 - In CC 'Vital statistics' has a class number in (BC) Medicine. DC ed 14 had given it a class number both in (BC) Medicine and in the host class Demography under (BC) Social Sciences. But ed 16 has abandoned the number in the (BC) Medicine and has retained only the number in the (BC) Social Sciences. In this respect it differs from CC.

Annotation for item 32 - In CC 'Industrial hygiene' has a class number in (BC) Medicine. DC ed 14 had given it a class number both in (BC) Medicine and in the host class Labour under (BC) Economics. But ed 16 has abandoned the number in the (BC) Medicine and retained only the number in the (BC) Economics. In this respect it differs from CC.

Annotation for item 35 - In DC ed 14 'Knitting' had been provided a class number in (BC) Fine Arts as well as in (BC) Useful Arts. But ed 16 abandons the number in Useful Arts and retains only the number in Fine Arts. But CC puts 'Kitting' in Useful Arts only.

Annotation for item 36 - 'Traffic regulation' was given both under host class Land transportation in (BC) Commerce and under (BC) Engineering in DC ed 14. In ed 16 only the class number under host class Highway transportation in (BC) Public services is retained. In CC 'Traffic regulation' is itself a (BC) under the main class Useful Arts.

Annotation for item 73 - CC has given to the 'Psychology of gang' the class number S8 which represents Social psychology. DC ed 14 had given a class number for the subject both in 301. 15 Social psychology and in 136 Child psychology. But ed 16 has abandoned the later number and concentrated the subject in Social psychology. To this extent DC 16 conforms to CC. But the two schemes of classification differ in the (BC) Social psychology itself, for in CC the (BC) is Psychology while in DC the (BC) is Sociology.

Annotation for item 78 - CC has included 'Map projection' in (BC) Geography. DC ed 14 had included it in (BC) Astronomy and in (BC) Drawing. Further in CC 'Map projection' comes under Mathematical geography. DC ed 16 too has concentrated 'Map projection' under Mathematical Geography. To this extent DC ed 16 conforms to CC. But the two schemes of classifications differ in the (BC) of Mathematical geography itself for in CC the (BC) is Geography while in DC the (BC) is Astronomy.

Annotation for item 81 - The connotation of the term 'Forest economics' implied in DC ed is inferred with the aid of the Canon of Enumeration. In other words it is indicated by the following sub-divisions of Forest economics - Forest geophysics, Forest policy, Forest resources, and Forest management. These sub-divisions clearly show that the subject is the economics of forestry as an industry. In this view the placing of the subject by CC in the (BC) Economics appear to be more appropriate than the (BC) Forestry as the DC ed 16 does.

Annotation for item 84 - 'Eugenics' is the "science which deals with influences primarily those of admitting social control that improve inborn or heriditary qualities in a series of generations of a race or breed especially of the human race''. The CC number expresses just this denotation of the term 'Eugenics'. But DC ed 16 puts it in the (BC) Medicine.

5 SCATTERING INTO TWO OR MORE (BC)

In eight cases just the opposite of Concentration has happed, i e, each of the classes originally shown in a single (BC) has now been shown in two or more (BC). A study of the cases show that they have been scattered generally because of the fact that:

1 The original subjects were composite ones; or

2 the original subjects have now been recognised as common isolates belonging to a number of (BC)

51 Composite Classes

Subject	Class number in DC ed 14 with chain	Class numbers in DC ed 16 with chains	Class numbers in CC with chains	Remarks
1 Selection, Location and design of aerodromes	629. 1362 Selection - location-design, Airports - Airdromes- Sea-dromes, Aeronautics	1) 629. 136 Design, Airports, Aeronautics	D43, 8:4 Design, Aerodromes, Aeronautical Engineering	+
		2) 711. 78 Planning for terminal facilities, Planning for transportation facilities, Area planning	NB, 8, 9(D43, 8) Aerodrome, Town Planning	+

2 Sales and prices of motor vehicles	629.2138 Sales–Prices, Commercial aspects, Motor vehicle engineering	1) 338.476292 Prices, Motor vehicles, Industries, Industrial economics and production economics, Economics	X8(D513):76 Prices, Motor vehicle industry, Economics	+
		2) 658.896292 Selling, Automobiles, Marketing, Business and industrial management	X8(D513):51 Marketing, Motor vehicle industry, Economics	+

Annotation - 1 In the first example, selection, location, and design of aerodromes was taken to be as one class and was provided with one class number in the (BC) Engineering. DC ed 16 has divided this into two separate classes. One dealing with the design of airports has been retained in the (BC) Engineering, the other dealing with planning aspects of airports has been re-allocated to the (BC) Town Planning. It can be seen that both the re-allocated (BC) conforms to the (BC) in CC.

2 In the second example, both sales and prices of motor vehicles were placed together as one class in the (BC) Engineering in DC ed 14. In DC ed 16 the subject has rightly been divided into two classes. One dealing with the prices of motor cars has been assigned to the host class Industrial Economics and the other dealing with the sale of motor cars has been assigned to the host class Industrial Management. Both of these host classes are in the (BC) Economics. It can be seen that the re-allocated (BC) conforms to the (BC) in CC.

52 Common Isolates to More Than one (BC)

521 Scattering from (BC) Museums

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
3 Collection and treatment of special materials	069.45–49 Collection and treatment of special materials, Museums	Scattered to 500-900 using from division 0744 e. g. – 549.0744 Collection and treatment of minerals, Mineralogy	H1:16 Collecting of minerals, Mineralogy	+

Annotation - 1 The class under consideration was provided with a class number in the (BC) Museum in DC ed 14. In DC ed 16 the subject involved has been given a place only as a common isolate in its Form Division (0744). This Form Division can be used along with any subject falling between 500 to 900.

2 In CC the subject 'Collecting' has also been treated as a Quasi Common Isolate. It can be used in the Energy Facet of the Geological and Biological Sciences.

522 Scattering from (BC) Ethics

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
4 Professional and business ethics	174.1-4 Ethics of clergyman, Physicians, lawyers and merchants, Professional and business ethics, Ethics	Scattered to all the Basic Classes Form division 069 is to be used. e.g. - 610.694 Medical ethics, Medical professions, Medical Sciences	R44(L) Medicine, Ethics	x

Annotation - 1 In DC ed 14, ethics for the professions of clergy, physician, lawyer, and merchant had specific places in the (BC) Ethics. For ethics of other professions the form division 069 was to be used. In DC ed 16 the class numbers for all the above mentioned four specific professions have also been abandoned. In their cases also the form division is to be used. Only works on professional and business ethics in general (without specific emphasis on any profession) are to be classed in the (BC) Ethics.

2 This treating of all professions alike is a move in the right direction as has been explained in Sec 3922. It has been also said there that the CC does not conform tc this pattern. In CC the decision in the idea plane is different. It does not prefer the scattering of books on different profession. On the other hand, instead of scattering, CC concentrates in the (BC) Ethics not only general professional ethics but also the ethics of every specific profession.

523 Scattering from the Host Class Public Finance

There are two cases of scattering of classes from this bost class.

5231 Land Grants

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
5 Land grants for specific purposes	336.14 For encouragement and aid of special enterprises, State domain and properties, Public finance	Scattered e.g. - 385.133 Land grants for railroad	X415:8D Finance, Management, Railroad	+
		379.12 Land grants for schools	T2:8D Financê, Management, School, Education	+

Annotation - 1 In DC ed 14 the subject was given a class number in the host class Public Finance. DC ed 16 has abandoned this class number and has recommended land grants to be made a subdivision of the host class concerned.

2 It can be seen that following this decision the re-allocated (BC) conforms to the (BC) in CC.

5232 Taxation

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
6 Taxes for specific purpose	336.279 Taxes for special purposes, Other taxes, Taxation, Public finance [May be divided like the whole classification]	To be classed with purpose e. g. - 021.9 Taxes for libraries	2:8D Finance, Management, Library	+

Annotation - 1 In DC ed 14 the subject was given a class number in the host class Taxation, as shown in column 2 of the above table. In DC ed 16 this place has been abandoned and it has been recommended that taxation for a specific purpose be made a subdivision of the host class concerned.

2 It can be seen that following this decision the re-allocated (BC) conforms to the (BC) in CC. Annotation 3 of Sec 524 below may also be referred to.

524 Scattering from the Host Class Descriptive Geometry

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remark
7 Stereotomy of stonecutting, Carpentry and stairbuilding	515.81 - 83 Stonecutting, carpentry, Stair-building, Stereotomy, Descriptive geometry and projections	1) 731.463 Stonecutting, Sculpturing in stone	ND;4:(B6:5) Stereotomy, Stone, Sculpture	+
		2) 694.8 Carpentry	M5:(B6:5) Stereotomy, Carpentry	+
		3) 694.8 Stairbuilding	NA, 2, 5:(B6:5) or	+
		4) 693.1 Stone masonry	D2,.5:(B6:5)	+

Annotation - 1 In DC ed 14 Stereotomy of stonecutting, carpentry and stairbuilding were all concentrated in one place in the host class Descriptive Geometry in the (BC) Geometry. DC ed 16 has abandoned this class number and has scattered the classes to their respective fields of application as shown in column 3 of the above table. DC ed 16 has also retained the class number 515.8 where general works on stereotomy are to be classed.

2 This move of DC is a happy one In DC ed 14 stereotomy for any particular purpose was concentrated in the host class i e, Descriptive Geometry itself. But in DC ed 16 the Descriptive Geometry of a subject is a subdivision of the subject. It can be seen that the re-allocated (BC) of DC conforms to (BC) in CC.

3 The appropriateness of the practice followed by CC all along and accepted

by DC in ed 16 can be seen as follows. In Sculpture, Carpentry and Stairbuilding, Descriptive Geometry comes in only as a methodology i e, as an Energy Isolate. The Primary subject is not Descriptive Geometry but Sculpture etc. Thus Sculpture etc is the Basic Facet and Descriptive Geometry is only an Energy isolate to be added to it.

525 Scattering from the Host Class Surveying

Subject	Class number in DC ed 14 with chain	Class number in DC ed 16 with chain	Class number in CC with chain	Remarks
8 Surveying for special purposes: military, naval, railroad, mining etc.	526.99 Surveying for special purposes, Surveying, Geodesy	To be classed with subject, e. g. - 625.11 Railroad surveying, Railroad engineering and construction, Railroad and road engineering, Engineering	D415:2 Surveying, Railroad, Engineering	+

Annotation - 1 In DC ed 14 Surveying for military, naval, railroad and mining purposes were given only one place under Surveying in the (BC) Geodesy. DC ed 16 has abandoned this place and has instructed to class surveying for a special purpose with the subject. An example has been given in column 3.

2 In CC apart from the general Survey work which comes under Mathematical Geography, Surveying is scheduled as an Energy isolate in the (BC) Engineering.

3 This move of DC is a happy one. As has been said in the annotation 3 of Sec 524 above, here also the primary subject of exposition is not Surveying. Surveying comes in only as an Energy isolate in subjects like, Railroad surveying etc.

6 MEASURE OF THE INFLUENCE OF CC ON DC

We have so far considered the probable influence of CC on DC in the idea plane, in the shifting of the 150 subjects in its ed 16.

The findings can now be shown in tabular forms as follows:-

61 Number of Re-allocations to New (BC)

Serial number	Nature of re-allocation	Number	Percentage
1	Re-allocation to (BC) used in CC	38	69
2	Re-allocation from a (BC) originally same as CC to a different one from CC	14	29
3	Neither the original (BC) nor the new (BC) conforming to CC	1	2
	Total	55	

In a sense 69 may be taken as the measure of the probable influence of CC on DC in the assignment of certain subjects to a new (BC).

62 Number of Concentrations

Serial number	Nature of Concentration	Number	Percentage
1	Concentration in the (BC) to which the subject has been assigned in the CC	76	87
2	Concentration in a (BC) different from the one to which the subject has been assigned by CC but one of the original (BC) of ed 14 was same as that of CC	8	9
3	Neither the original (BC) nor the new (BC) conforming to that of CC	3	3
	Total	87	

In a Sense 87 may be taken as the measure of the probable influence of CC in choosing one of the two alternative (BC) and in determining the new (BC) in DC.

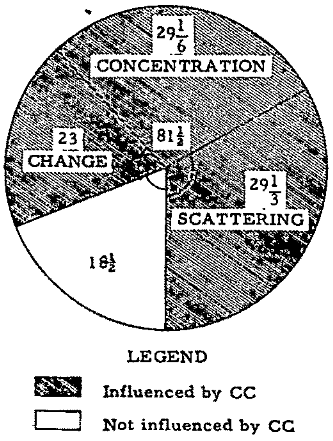
63 Number of Scattering

Serial number	Nature of scattering	Number	Percentage
1	Scattering of subjects to different (BC) which are same as those in CC	7	88
2	Scattering of subjects to different (BC) which are different from those in CC	1	12
	Total	8	

In a sense 88 may be taken as the measure of the probable influence of CC on the use of common isolates and the breakup of isolates.

7 DIAGRAM

If we take the 150 re-allocations considered above as the universe then the impact of the CC can be diagramatically represented as follows:



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Note: The author of each documents, unless otherwise stated, is S R Ranganathan.

[D1] Sec 21 Dewey Decimal Classification, ed 16. 1958. Introduction, P 21.

[R1] Sec 11 Elements of library classification, ed 3. 1960.

[R2] Sec 312 Prolegomena of library classification, ed 2, 1957. Sec 3581

[R3] Sec 312 ibid; Sec 3583.

[R4] Sec 314 Colon Classification, ed 6, 1960. Chap 6, Sec 62.

[R5] Sec 371 ibid; Chap 5.

[R6] Sec 322 Classification of environmented entity. (Depth classification, 30). (Ann lib sci, 5, 1958, 113-21).

Paper P

PHILOSOPHY OF REFERENCE SERVICE

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Evaluates Dr Ranganathan's Reference service (1961)*. Gives a detailed definition of reference service after analysing the purpose-complex of a library system. Examines the subject in the light of the Five laws. Explains with the aid of a Funnel Diagram the distinction and relation between long and ready reference services. Gives a holistic view of the several library techniques. Concludes with a mystic picture of reference service.

0 INTRODUCTION

Reference service is the dynamic act of animating and dowering with the life energy of the reference librarian the knowledge and information lying curled in cold point in documents for the use of readers. The reference librarian brings about the mating of the fermenting mind of a reader with the thought frozen in documents. This communion sends dazzling sparks of new thought in its train to make human life happy and full. This fills the reference librarian with thrill and delight in reciprocation. It is in the reference service that he finds scope for the unleashing of all his talents and faculties.

1 EMERGENCE OF THE PHILOSOPHY

Reference service is still the young and new entrant into the field of library service. It is the latest to come into vogue. It has been due to the pressure of the five laws of library science. Hence naturally a reference librarian is set to wonder: What is the principle guiding me in my work? What is the theory behind my doings? Is there a salvation for me in this field of work? Above all, what is the Philosophy of Reference Service?

The answer is furnished by Reference service (1961).* This philosophy was first propounded in 1940 in edition one of the book. The present edition has worked out the philosophy in a fuller measure Perhaps this is the first book to present reference service in the fulness of its elevating quality. The philosophy is so invigorating that the book will turn every sincere reference librarian into a missionary dedicated to document-pilgrimage with the readers in searching, discovering and bringing to light the hidden knowledge and information.

2 SAGA OF SUBLIME DELIGHT

The author and his colleagues had intense and varied experiences of the pioneering work of reference service in Madras University Library. The experiences got irradiated by the five laws of library science. The radiant thoughts crystallised out of this unique experience are recorded in the book. Hence it is original and stimulating. The method of exposition is also as interesting as it is new. All the subtlities and ramifications of reference service—in action, are explained in pristine clarity with the help of 167 case studies interspersed throughout the book. The case studies, drawn from actual experience, read like short stories and parables. The wide knowledge of the author is brought to bear on the subject. There is a scientific attitude to the whole subject. For, it emerges as the deductions of the Five laws in the descendent region of the Spiral of Scientific Method. The pages are replenished with the beauty, music and rhythm of poetry and imagery drawn from English literature and Indian classics. There is an analysis of the psychological aberrations of the readers and the reference staff owing to their own intrinsic behaviouristic imbalance and also owing to the abnormalities of the content, structure and form of books. There is also a study of the social benefits of reference service. An attempt is made to derive light from mystic experience. On the whole the subject shines with a cosmic beauty. There is a divine lustre around it. An aroma and exhilaration fill us as we read through the book. In effect the study of reference service is made a saga of sublime delight.

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*Ranganathan (S R): *Reference Service Ed. 2.* 1961, Asia Publishing House, Ranganathan series in library science, 8.

3 EVOLUTION

Reference service had to follow the evolution pattern of a tree. Only after root, trunk and branches were fully grown could the flower of reference service blossom out. Dr Ranganathan sensed the importance of reference service even when he was a teacher of mathematics prior to becoming librarian. He was practising it almost unconsciously. The future "World Librarian" did not then have a full grasp of its implications. At that time though unconsciously he was working "in the area of overlap between the regions of a teacher and a reference librarian". After his entrance into the profession, his first book the Five Laws of Library Science (1931) highlighted all the aspects of library science. Then reference service emerged as an implication of the fourth, first, second and third laws in order. The author's mind had to push this aspect to the sub-conscious level. For, he had to design the techniques for the more pressing and primary parts of library science. So his books on classification, cataloguing and administration came out first. Once library science was equipped with good classification and cataloguing techniques and was provided an appratus for efficient management, the time was ripe for the emergence of reference service into the conscious level. The tree was fully grown; now it had to blossom. Reference service surged up in the mental aperture of the author. The result was the book reference service in its edition 1 in 1940.

4 BREAK UP OF EDITION 1

The first edition of the book was brought out in two volumes. The first volume was on reference service and bibliography; volume two was a bibliography of reference books and bibliographies. This arrangement was allright in 1940, despite the discordancy in clubbing all the three of them in one book. During the last decade the growth of literature on the subject of library science and the rapid evolution in library practices in the field of reference service and documentation made the anomoly of edition 1 more conspicuous. Hence, the necessity for their break up and reorganisation was felt. Volume 1 of edition one has been broken into 3 distinct, yet interrelated books:

1 Reference service (edition under review);

2 Documentation and its facets (under print); and

3 Enumerative bibliography (in preparation).

Reference service (1961) is completely rearranged, reorganised and re-written with many new chapters. These add new dimensions to the subject. They forge into it new ideas new techniques and new experiences in the light of latest developments in the field.

5 PURPOSE-COMPLEX OF A LIBRARY

Here is a new, practical, comprehensive, up-to-date enunciation of the purpose-complex of a library as a social institution. The purposes are:-

1 To serve as social memory; and for this purpose,

2 To assemble, organise, preserve, socialise, and serve all expressed thought embodied as manuscripts, books, periodicals, their constituent documents, however minute, and every other similar document produced as a means for communication; and by this means,

3 To help in the transmission of the knowledge of the earlier generations to the later ones; and by this means,

4 To help in the cumulation and the further building up of knowledge from generation to generation; and in a similar way,

5 To help in the contemporary development of knowledge without any wastage in the building of knowledge, by the unintended and purposeless repetition of effort and the consequent wastage in the research-potential of humanity; and also

6 To conserve the research time of humanity by the separation of literature-search from positive research; and also

7 To help in the perpetual self-education of one and all; and further,

8 To collect together all available recorded information — particularly in the form of reference books, and to socialise and serve freely all such information to each according to his needs at the moment; and by all such means,

9 To increase the economic resources of of humanity to the extent necessary to maintain the ever-increasing population, in comfort and free from want of any kind; and also

10 To help in the mutually understanding, mutually co-operating, and mutually tolerant peaceful co-existence of individuals, communities, and nations; and further

11 To help in the elevating, self-dependent use of leisure with the aid of freely served books, pictures, sound record and other similar materials; and also

12 To help in increasing the opportunity for the spiritual awakening of one and all of the members of humanity.

This is the profoundest revelation of the purpose of a library. A full realisation of this purpose makes it inevitable for every library to have an efficient, unbiased and yet aggressive reference service to fulfill the demands of all the laws of library science.

6 DEFINITION

The above purpose-complex leads us on to an exact and comprehensive definition of reference service.

61 Reference Service

Reference service is personal service to each reader in helping him to find the documents answering his interests at the moment, pin-pointedly exhaustively and expeditiously both on request and in anticipation for the growth of knowledge and collation of useful information.

62 Reference Librarian

A reference librarian is a librarian of higher order. He shall have a full view of the universe of knowledge in general and a closer view of the sector he serves. He will be well-versed in the techniques of literature search as well as research. He will be a document specialist knowing well the structure, scope and the abnormalities of the world of documents. He shall be capable of treading his high way through their criss-cross and labyrinth. Above all this he shall have immense patience, good culture and an analytical mind. A profuse smile dances on his lips. His good cheer and dynamism will be almost contageou

Ie will be a sublimated salesman of the con-
nts of documents, with readers as his clien-
le. In effect, he will be the most dynamic,
eerful, symapathetic and resourceful com-
panion of the readers in the library.

7 LAWS OF LIBRARY SCIENCE AND REFERENCE SERVICE

All the laws of library science plead fervently for the introduction of reference service in every kind of library.

71 Fourth Law

The fourth law "Save the time of the reader" was the first to insist on reference service in business and research libraries. The men in industry who had to devote the full energy to boost production, could not afford to spend their precious time in searching for information. They wanted the information to flow to them to the shop floor right then and at the moment. An efficient reference service became a necessity for them. The research workers had to spend their high order of calibre and ingenuity to wade through the document-complex as a preparation and supplement to their research projects. Naturally this was a cumbersome and non-creative affair for them. It blocked the flow of their intellectual and intuitional spring. It reduced the amount of contributions they could have made in their life time. It is estimated that a scientific research worker in the West spends on the average 33.4 per cent of his total time, for information work. To reduce this time for more creative work a good reference service became a necessity. Thus the fourth law declared that reference service is a necessity and not a luxury. Necessity is the mother of invention. Hence the practice is coming into life in many dimensions.

72 First Law

Books are for use. This law insists the reference librarian to put every document in its ken to use. To allow them to rust unused spells, a curse on him. He should infuse them with life.

The readers enter the stack room, quite often, with undefined interests. They findl rows of books sitting on lines and lines of shelves. None of them speak. They are taciturn and mute. Lo! there comes a reference librarian with a glow in his eyes and a smile on his face. He leads the reader with all sweetness through the gangways across the rows of books. Now the reader finds the old books in the same old stackroom in a new light. On one shelf he finds Shakespeare sitting with omnicient majesty, on the other Milton with didactic serenity, on the third Dickens with Pickwickian flamboyancy and so on a galaxy of the master minds of the ages come to life and whisper to him make him like them and take them home for their enlightenment and use. They realise "Books are for use". The brandishments of the wit, humour and knowledge of a good reference librarian among the readers amidst the books will make many a reader exclaim in ecstacy, "Ah! I never knew this before.... How nice of you!" This sends a cool breeze of delight into the personality of the reference librarian. He gets exhilarated. He is puffed to do his work with doubled zest and zeal. If Shakespeare would have had an occasion he would have warbled,

> Reference service is twice blest,
>
> It blesseth him that takes, and him that gives.

73 Second and Third Laws

To find for every reader the right book and every book the right reader is the insistance of the laws. To do this in a personal and effective way, a reference librarian who knows intimately the complexity of documents and the interests and likings of the clientele is a necessity. He is a live-link, between the readers and the documents. His mission is to convert every potential reader into an active reader, and every dormant book into a useful book.

74 Fifth Law

Library is a growing organism. The document production rate is overhelmingly great both in kind and form. This makes it impossible for any library to be self-sufficient in every section of knowledge. Hence it is imperative at any library system should have a cellular structure, each cell specialising in a particular branch so that all the cells attempt to constitute the whole. In such a set-up, the reference librarian should strech his hand even across the boundaries of his library to other libraries—near and far.

75 Reference Service and Documentation

The growth of knowledge is in geometrical progression. This makes it difficult for a specialist to keep pace with the nascent micro-thought even in his own field. People in industry are hard pressed for time to keep abreast of the technical advances in the field of their products. Here the reference librarian has the immense responsibility of scanning, screening, abstracting and serving pin-pointedly and relevantly the nascent micro-thought coming in periodical publications to the men in business and industry, so that no piece of vital information is lost sight of. Similar service is to be rendered for research workers. This part of reference service is coming to be called as Documentation service. The relationship between reference service and Documentation service is explained by Dr Ranganathan in this book. "Documentation service is reference service with emphasis on specialist readers and on nascent micro-thought. This is a new ramification of reference service, made dominant by the social demands of the post war period". In effect, this falls into the region of long range reference service. The reference librarian should keep in touch with national and international documentation centres. He should make use of documentation lists and abstracts made by them. He may even have to edit them to provide a slant of direct usefulness to the clientele he serves. He may even have to point out to the documentation centres the lacunae in their work.

8 LONG RANGE AND READY REFERENCE SERVICES

Ready reference service is reference se vice finished in a very short time. Most of will be served with the help of a dictionary, encyclopaedia, year book, directory and si lar reference books. This is the service rendered by "Information desks" in Wester libraries.

Long range reference service requires a longer period and the search for informatio has to stretch beyond the reference books a even beyond a particular library. The perc age of long range and ready references sou in three main types of library are shown in following table.

Type of library	Percentage of ready reference problems	Percentag of long ra reference problems.
Public Library	75	25
Research Library	30	70
Business Library	90	10

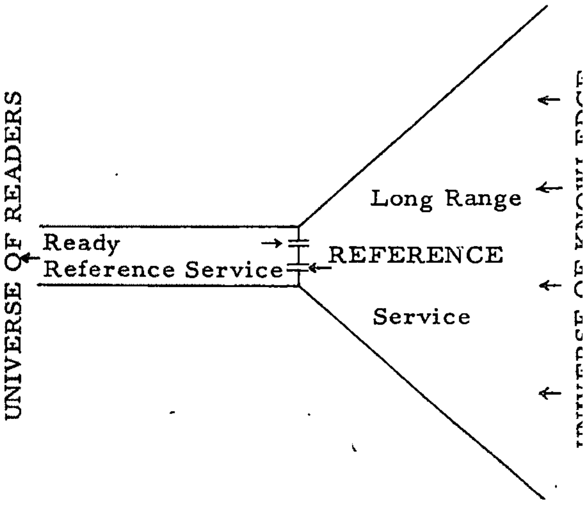

Fig 1 Funnel Diagram

81 Funnel Diagram

The information which lies in the area of
er long range or ready reference service
elative. It is dependent upon the volume
variety of reference books available. The
nel Diagram (Fig. 1) represents this phenomenon. The hollow cone represents the infi-
e region of long range reference service in-
mations to be retrieved out of the universe
nowledge. This intangible region is to be
lored for an indefinite time. The narrow
all tube represents the area of ready
ference service. The information in
s area is tangible, within our control and
ws readily to the universe of readers.
re is a continuous flow between these two
ions. What is a long range reference ser-
e to-day may turn out to be a ready refer-
e service ten years hence owing to the
ning of a new reference book. That piece
nformation is pushed into the tube region
he funnel. Similarly an ephemeral infor-
tion may be in the forefront fifty years ago.
w it might have been forgotten as having no
portance. Some special circumstance may
in create a demand for it. Then the task of
avelling it from the deposits of dead mem-
turns out to be a long range reference ser-
e. That piece of information has slipped
of the tube region to the cone region. Simi-
ly an enquiry on chemical fertiliser storage
thods—unusual and unexpected—in a library
the Machine Tools Industry would naturally
ome a long range reference service prob-
n. The same topic will, however, become
eady reference question in the library of the
dri Fertiliser Factory .

82 An Appeal

In the modern phase of industrialisation,
e is measured in terms of money. In an
ustrial concern it is the philosophy of a
t accountant. The time lag avoided in any
t of the work flow of a product results in
ater productivity and lower cost of the pro-
t. So it is implied that as many of the long
ge reference services should be converted
o ready reference services. In the long run,
s is bound to result in greater utilisation of
ional wealth as also in the increase of productivity. This in turn will bring about greater happiness to mankind. The Funnel diagram clearly represents that the emergence of each good reference book derives the information from the rather nebulous region of the long range reference service (cone) to the crystallized region of ready reference service (tube). So the greater the number of reference books, the greater the area of ready reference service information. But by their very nature reference books cannot be produced by individuals. So, for their own benefit and prosperity the governments, industries and academic and research institutions should pool their knowledge experience, men and money to compile as many reference books as possible in the respective fields of their specialisation. This is a combined appeal of all the laws of library science. The experience of reference librarians throughout the country may be tapped to locate the fallow regions to be filled up with reference books.

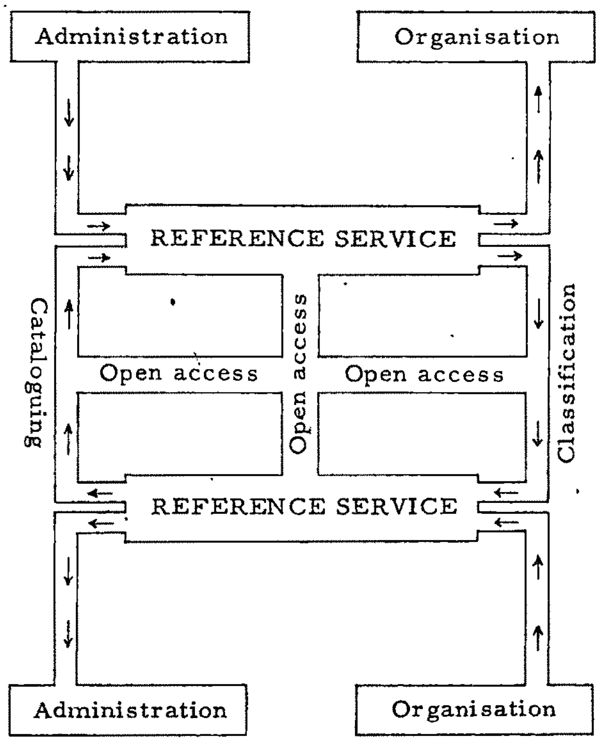

Fig 2 Holistic Picture of Reference Service

9 HOLISTIC PICTURE OF REFERENCE SERVICE

Reference service cannot and will not exist independent of other techniques of library science. In fact, it derives its life blood from them. In turn, it aids to discover the weakenesses of various techniques and tries to renovate and rejuvinate them, The Tank-flow diagram (Fig. 2) gives a holistic picture of reference service. An efficient exhaustive, pin pointed and expeditious reference service can be given only if it is aided by an open-access system with an efficient classified catalogue and a proper faceted classification. The facet analysis method is a very useful apparatus for the diagnosis and crystallization of the diffused and opaque problems of the readers. Further an efficient administration and a proper organisational link-up of the libraries of the country are prerequisite to successful reference serviec. Again the reference service floor becomes the laboratory for the acid test of the various techniques and policies of library service. The reference librarian becomes a liason agency for the different technical departments and the top management. He helps the technical departments to devise and reinforce the techniques in the light of his experience. Similarly his experience is of help for the top management in stepping up administrative efficiency and in making proper organisational policy decisions. A clear conception of this holistic view of the different facets of library service—their inter-connection, inter relation and mutual reinforcement—is the very quintessence of the philosophy of reference service.

91 Mystic Picture of Reference Service

The sublime philosophy of reference service has been drawn obliquely from the Vedas, the classics, and the mystics of India. They fill us with the supreme delight of the mystics. Here is an exhortation to the practising reference librarian as drawn from a passage in Taittriya—Upanishad

"The reader-guest is supreme to you.

Give him service with all attention and in all sincerity.

Give him service to the entire capacity at your command.

Give him service in all modesty and in full freedom from any touch of prestige or ego.

Give him service in full measure lest there should be any offence to the Laws of Library Science.

Acquire the best of knowledge and information for giving him your service."

The reference librarian should combine his personality the distinguishing characte of the four sons of Dasaratha, the pearls o Raghu family. He should, like Satrugna, c trol the ego in him which prompts him to d least and seek most. Like Lakshmana he should do service for its own sake without flirting for its fruits. It is the Karmayogi call of the Gita also. In devotion to duty, ticence, integrity and depth he should emu Bharata. In geniality, charm, sociability helpfullness associated with modesty and e leness of thought, word and deed Rama sh be his guide. A reference librarian treadi the foot-steps of the sons of Dasaratha sha be an excellant gem of his profession and a Kalpa Vraksha for the society.

92 Light from Aurobindo's Mother

Drawing inspiration from the four attributes of Sakti—Maheswari (Wisdom) Mahak (Strength) Mahalakshmi (Harmony) and Ma saraswathi (Perfection)—as interpreted by Aurobindo, the great mystic of India, the author reaches the pinnacle in explaining t mystic experience of reference service.

"This inspiration should embrace both external doings and inner adjustment. Th inner adjustment is that of self-discipline self-perfection. It should help him to get mined knowledge, to lose himself in unive love and delight, and to establish himself i supreme self-mastery and all-mastery. F fection will come with the advent of the fee of his being an eternal portion of the consc ness and force of Sakti, the being of her B the force of her Force and the ananda of h Ananda. When this condition is entire, kn ledge, will, and action will become sure, simple, luminous, spontaneous, and flawl and an outflow from the Supreme."